This document was too large to scan as a single document. It has been divided into smaller sections.

Section 2

Document Information			
Document #	FOIA-2009-0051	Revision	
Title	FREEDOM OF INFORMATION ACT REQUEST (FOI 2009-0051)		
Date	09/09/2009		
Originator	RIEHLE DC	Originator Co.	DOE-RL
Recipient	CARPENTER T	Recipient Co.	HANFORD CHALLENGE
References			
Keywords	OCE, FOIA, SENSITIVE, PRIVATE CITIZEN		
Projects			
Other Information			

S

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726283 R 1

1b. Proj. ECN NA - - R

2. Simple Modification ☒ Yes ☐ No	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date Apr 10, 2009
5. Originator's Name, Organization, MSIN, & Phone No. GJ Coleman, BO-WSE, S7-24, 372-3849	6. PrHA Number No. 00741 R - 0 ☐ N/A	7. USQ Number No. TF - 09 - 0458 - S R - 1 ☐ N/A	8. Related ECNs ECN-723267-R0
9. Title Disconnect Obsolete Equipment	10. Bldg. / Facility No. 242-S	11. Equipment / Component ID NA	12. Approval Designator NA
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) H-2-46478, Sh 1, R1		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number TFO-WO-09-1097	16b. Modification Work Completed Responsible Engineer / Date	16c. Restored to Original Status (TM) NA Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

PROBLEMS: 1. Rev 1 of this ECN removes power to EX-C-1 exhauster, but does not update the associated panel schedule.

SOLUTION: 1. Remove the load from the panel schedule.

ANALYSIS: Disconnecting obsolete equipment with no present or future use, and correcting drawing errors will not affect facility operations or safety and will enhance drawing accuracy with respect to the facility.

TESTING: none required.

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

Correcting electrical drawings will make the facility operation and maintenance safer.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
MA Fish	S7-90	TH Nguyen	S7-90
GJ Coleman	S7-90		

Release Stamp

DATE: APR 10 2009
STA: 4
HANFORD RELEASE
ID: 2

ENGINEERING CHANGE NOTICE	1a. ECN 726283 R 1
Page 2 of 5 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN NA - - R

22. **Revisions Planned** (Include a brief description of the contents of each revision)
None

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. **Commercial Grade Item Dedication Numbers** (associated with this design change)
None

24. **Engineering Data Transmittal Numbers** (associated with this design change, e.g., new drawings, new documents)
None

25. **Other Non Engineering (not in HDCS) documents that need to be modified due to this change**

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	NA		
Operations Procedure	NA		
Maintenance Procedure	NA		
NA			

26. **Field Change Notice(s) Used?**
☐ Yes ☒ No
If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. **Design Verification Required?**
☐ Yes ☒ No
If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. **Approvals**

Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	GJ Coleman	4/10/2009	Originator/Design Agent		
Resp. Manager	MA Fish	4/10/2009	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	TH Nguyen	4/10/09	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

Document/Drawing No. H-2-46478 Sheet 1 Revision 1

15

480V AC-3Ø POWER PANEL	
D1 Bottoms Pump P-B-3, 75 HP	D2 SPARE
D3 Stack Monitor 296-S-18 (H-2-92444)	D4 Bottoms Pump P-B-2, 75 HP
D5 Spare	D6 Air Sampling Vacuum Pump P-AS-1, 5 HP, P-AS-2, 3/4 HP
D7 Seal Water Booster Pump P-C106	D8 Emergency Paneiboard "C"
D9 Spare	D10 Spare

480V AC POWER PANEL "D" SCHEDULE

SEE REF. DWG H-2-46424-2

Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	1a. ECN 726283 R 1
Page 4 of 5	1b. Proj. ECN NA - - R

Document/Drawing No. H-2-46478 Sheet 1 Revision 1

REF ECN-723267-R0

WAS

480V AC-3Ø POWER PANEL	
D1 Bottoms Pump P-B-3, 75 HP	D2 EX-C-1, & AC-1 Shunt Relay
D3 Stack Monitor 296-S-18 (H-2-92444)	D4 Bottoms Pump P-B-2, 75 HP
D5 Spare	D6 Air Sampling Vacuum Pump P-AS-1, 5 HP, P-AS-2, 3/4 HP
D7 Seal Water Booster Pump P-C106	D8 Emergency Paneiboard "C"
D9 Spare	D10 Spare

480V AC POWER PANEL "D" SCHEDULE

SEE REF. DWG H-2-46424-2

Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

REVIEW COMMENT RECORD (RCR)	1. Date 4/10/2009	2. Review No. N/A
	3. Project No. N/A	RCR Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
ECN-726283 Rev 1	242-S Evaporator EDS	MA Fish, TH Nguyen	BO - West System Engineering	2704HV, 372-3657/ 2704HV, 373-6289

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: ____ MA Fish (Organization Manager (optional) (print and sign))	MA Fish, TH Nguyen (Reviewer/Point of Contact (print and sign)) 4/10/09 (Date) GJ Coleman (Author/Originator (print and sign))	MA Fish, TH Nguyen (Reviewer/Point of Contact (print and sign)) 4/10/09 (Date) GJ Coleman 4/10/09 (Author/Originator (print and sign))

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	MA Fish ---No Comments					
2	TH Nguyen ---- No comments					

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726283 R 0

1b. Proj. ECN NA - - R

2. Simple Modification ☒ Yes ☐ No	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date Mar 19, 2009
5. Originator's Name, Organization, MSIN, & Phone No. GJ Coleman, BO-WSE, S7-24, 372-3849	6. PrHA Number No. 00741 R - 0 ☐ N/A	7. USQ Number No. TF - 09 - 0458 - S R - 0 ☐ N/A	8. Related ECNs NA
9. Title Disconnect Obsolete Equipment	10. Bldg. / Facility No. 242-S	11. Equipment / Component ID NA	12. Approval Designator NA
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) H-2-46424, Sh 2, Rev. 9, H-2-46424, Sh 4, Rev. 15		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number TFO-WO-09-1097	16b. Modification Work Completed Responsible Engineer / Date	16c. Restored to Original Status (TM) NA Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

PROBLEMS: 1. The drawings show obsolete equipment at the 242-S evaporator with an incorrect fuse size. This equipment has no present or future use at the evaporator. 2. There is a typographical error showing a disconnect switch with a frame size and trip setting; it should show a switch rating and fuse size.

SOLUTION: 1. Revise drawing to show the obsolete equipment disconnected from the panel board. 2. Correct the typographical error to read a switch rating and a fuse size.

ANALYSIS: Disconnecting obsolete equipment with no present or future use, and correcting drawing errors will not affect facility operations or safety and will enhance drawing accuracy with respect to the facility.

TESTING: none required.

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

Correcting electrical drawings will make the facility operation and maintenance safer.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
MA Fish	S7-24	TH Nguyen	S7-24
GJ Coleman	S7-24	GJ Gauck	S7-24
KJ Hull	S7-24		

Release Stamp

DATE: MAR 19 2009
STA. 3
HANFORD RELEASE
ID: 18

ENGINEERING CHANGE NOTICE	1a. ECN 726283 R 0
Page 2 of 5 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN NA - - R

22. **Revisions Planned** (Include a brief description of the contents of each revision)

None

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. **Commercial Grade Item Dedication Numbers** (associated with this design change)

None

24. **Engineering Data Transmittal Numbers** (associated with this design change, e.g., new drawings, new documents)

None

25. **Other Non Engineering (not in HDCS) documents that need to be modified due to this change**

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	NA		
Operations Procedure	NA		
Maintenance Procedure	NA		
NA			

26. **Field Change Notice(s) Used?**

☐ **Yes** ☒ **No**

If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. **Design Verification Required?**

☐ **Yes** ☒ **No**

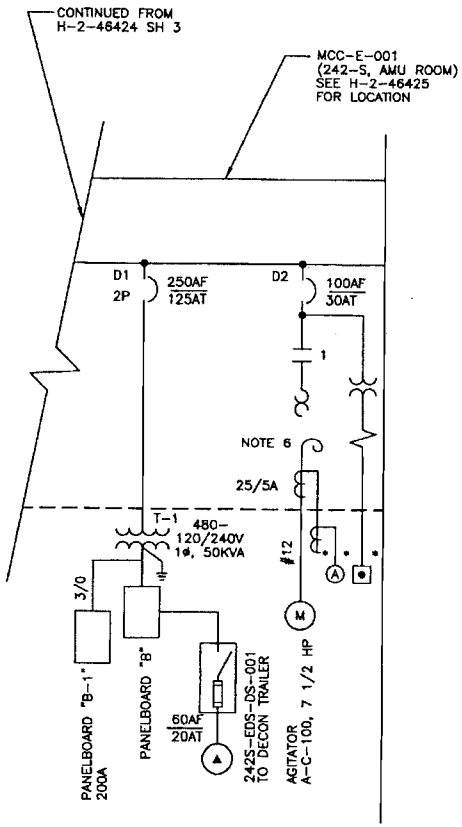
If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. **Approvals**

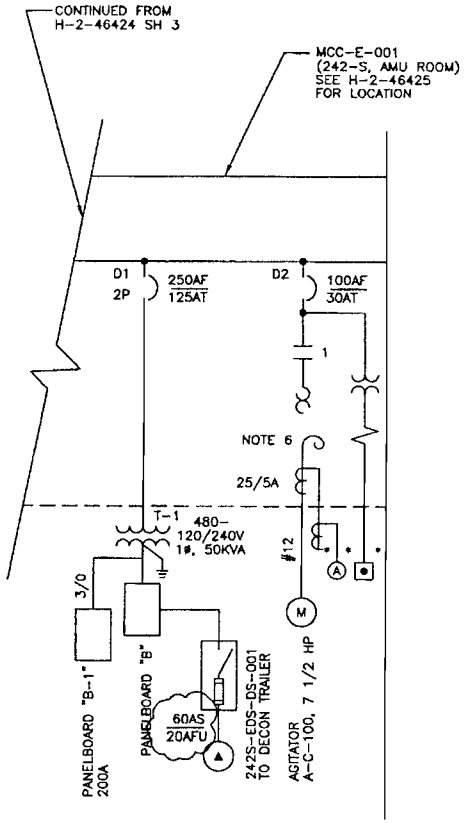
Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	GJ Coleman, GJ Coleman	3/19/09	Originator/Design Agent		
Resp. Manager	MA Fish, MA Fish	3/19/09	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	TH Nguyen, TH Nguyen	3/19/09	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

DWG H-2-46424 SH 4 REV 15

WAS:



IS:



DWG H-2-46424 SH 2 REV 9

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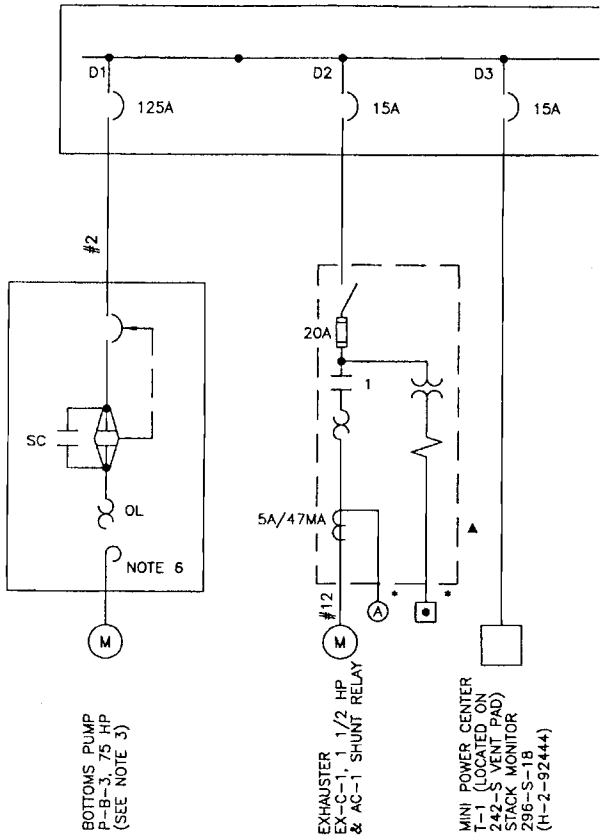

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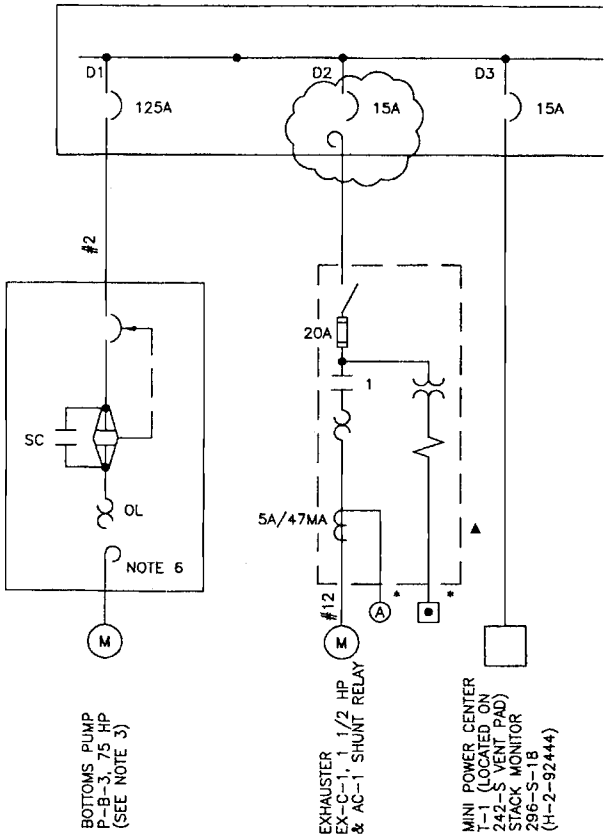

REVIEW COMMENT RECORD (RCR)	1. Date 3/19/2009	2. Review No. N/A
	3. Project No. N/A	RCR Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
ECN-726283 Rev 0	242-S Evaporator EDS	MA Fish, TH Nguyen	BO - West System Engineering	2704HV, 372-3657/ 2704HV, 373-6289

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: ____ Organization Manager (optional) (print and sign): MA Fish	Date: ____ Reviewer/Point of Contact (print and sign): MA Fish, TH Nguyen Author/Originator (print and sign): GJ Coleman	Date: 3/19/09 Reviewer/Point of Contact (print and sign): MA Fish, TH Nguyen TN Author/Originator (print and sign): GJ Coleman 3/19/09

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	MA Fish ---No Comments 3/19 for MAF					
2	TH Nguyen ---- No comments					

S

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726283 R 1

1b. Proj. ECN NA - - R

2. Simple Modification	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date
☒ Yes ☐ No			Apr 10, 2009
5. Originator's Name, Organization, MSIN, & Phone No.	6. PrHA Number	7. USQ Number	8. Related ECNs
GJ Coleman, BO-WSE, S7-24, 372-3849	No. 00741 R - 0 ☐ N/A	No. TF - 09 - 0458 - S R - 1 ☐ N/A	ECN-723267-R0
9. Title	10. Bldg. / Facility No.	11. Equipment / Component ID	12. Approval Designator
Disconnect Obsolete Equipment	242-S	NA	NA
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.)		14. Safety Designation	15. Expedited/Off-Shift ECN?
H-2-46478, Sh 1, R1		☐ SC ☐ SS ☒ GS ☐ N/A	☐ Yes ☒ No
16a. Work Package Number	16b. Modification Work Completed	16c. Restored to Original Status (TM)	17. Fabrication Support ECN?
TFO-WO-09-1097	Responsible Engineer / Date	NA Responsible Engineer / Date	☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

PROBLEMS: 1. Rev 1 of this ECN removes power to EX-C-1 exhauster, but does not update the associated panel schedule.

SOLUTION: 1. Remove the load from the panel schedule.

ANALYSIS: Disconnecting obsolete equipment with no present or future use, and correcting drawing errors will not affect facility operations or safety and will enhance drawing accuracy with respect to the facility.

TESTING: none required.

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

Correcting electrical drawings will make the facility operation and maintenance safer.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
MA Fish	S7-90	TH Nguyen	S7-90
GJ Coleman	S7-90		

Release Stamp

DATE: APR 10 2009
STA: 4
HANFORD RELEASE
ID: 2

ENGINEERING CHANGE NOTICE	1a. ECN 726283 R 1
Page 2 of 5 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN NA - - R

22. Revisions Planned (Include a brief description of the contents of each revision)

None

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. **Commercial Grade Item Dedication Numbers** (associated with this design change)	24. **Engineering Data Transmittal Numbers** (associated with this design change, e.g., new drawings, new documents)
None	None

25. Other Non Engineering (not in HDCS) documents that need to be modified due to this change

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	NA		
Operations Procedure	NA		
Maintenance Procedure	NA		
NA			

26. **Field Change Notice(s) Used?**		27. **Design Verification Required?**
☐ Yes ☒ No If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.	NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.	☐ Yes ☒ No If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. Approvals

Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	GJ Coleman	4/10/2009	Originator/Design Agent		
Resp. Manager	MA Fish	4/10/2009	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	TH Nguyen	4/10/09	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	1a. ECN 726283 R 1
Page 3 of 5	1b. Proj. ECN NA - - R

Document/Drawing No. H-2-46478 Sheet 1 Revision 1

IS

480V AC-3Ø POWER PANEL	
D1 Bottoms Pump P-B-3, 75 HP	D2 SPARE
D3 Stack Monitor 296-S-18 (H-2-92444)	D4 Bottoms Pump P-B-2, 75 HP
D5 Spare	D6 Air Sampling Vacuum Pump P-AS-1, 5 HP, P-AS-2, 3/4 HP
D7 Seal Water Booster Pump P-C106	D8 Emergency Paneiboard "C"
D9 Spare	D10 Spare

480V AC POWER PANEL "D" SCHEDULE

SEE REF. DWG H-2-46424-2

Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	1a. ECN 726283 R 1
Page 4 of 5	1b. Proj. ECN NA - - R

Document/Drawing No. H-2-46478 Sheet 1 Revision 1

REF ECN-723267-RØ

WAS

480V AC-3Ø POWER PANEL	
D1 Bottoms Pump P-B-3, 75 HP	D2 EX-C-1, & AC-1 Shunt Relay
D3 Stack Monitor 296-S-18 (H-2-92444)	D4 Bottoms Pump P-B-2, 75 HP
D5 Spare	D6 Air Sampling Vacuum Pump P-AS-1, 5 HP, P-AS-2, 3/4 HP
D7 Seal Water Booster Pump P-C106	D8 Emergency Paneiboard "C"
D9 Spare	D10 Spare

480V AC POWER PANEL "D" SCHEDULE

SEE REF. DWG H-2-46424-2

Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

REVIEW COMMENT RECORD (RCR)	1. Date 4/10/2009	2. Review No. N/A
	3. Project No. N/A	RCR Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
ECN-726283 Rev 1	242-S Evaporator EDS	MA Fish, TH Nguyen	BO - West System Engineering	2704HV, 372-3657/ 2704HV, 373-6289

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: ____ Organization Manager (optional) (print and sign): MA Fish	Date: 4/10/09 Reviewer/Point of Contact (print and sign): MA Fish, TH Nguyen; Author/Originator (print and sign): GJ Coleman	Date: 4/10/09 Reviewer/Point of Contact (print and sign): MA Fish, TH Nguyen; Author/Originator (print and sign): GJ Coleman 4/10/09

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	MA Fish ---No Comments					
2	TH Nguyen ---- No comments					

Task# WRPS-PER-2008-0167.26

E-STARS[R] Report
Task Detail Report
07/08/2009 1022

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.26		
Subject	WRPS-PER-2008-0167; RES; Prepare/perform work package to replace fuse in EX-C-1 (EC-1-1 fan motor)		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Active
	Prepare/perform work package to replace fuse in EX-C-1 (EC-1-1 fan motor) Deliverable: Copy of work record. Reference: Issue 8.1.3 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Ficklin, Jim - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments

1. DNFSB Electrical Letter Attachment.pdf
2. DNFSB Electrical Letter.pdf
3. Link to PER
4. RE_ WRPS-PER-2008-0167 _RES_.msg
5. Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg
6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Owen, Annette) - 05/26/2009 1100
	Due Date Extension
	Extend CA .26 to 7/25/09 per e-mail request. The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg

TASK DUE DATE HISTORY

Modified	05/26/2009 1101 - ^PER Coordinator	**New Due Date**	07/25/2009 0000

Task# WRPS-PER-2008-0167.26			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	06/21/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Message

From: Bragg, David A

Sent: Tuesday, May 26, 2009 10:18 AM

To: ^WRPS Corrective Action Group

Cc: Knight, Mark A; Brooks, Rocky L

Subject: Request to Extend WRPS-PER-2008-0167 Corrective Actions

Per direction of Mark Knight, please extend the following corrective actions to July 25, 2009:

WRPS-PER-2008-0167.26

WRPS-PER-2008-0167.27

WRPS-PER-2008-0167.28

WRPS-PER-2008-0167.29

WRPS-PER-2008-0167.30

WRPS-PER-2008-0167.34

The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages.

Thank you,

David Bragg
Base Operations Maintenance Engineering

Task# WRPS-PER-2008-0167.27

E-STARS[R] Report
Task Detail Report
07/08/2009 1023

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.27		
Subject	WRPS-PER-2008-0167; RES; Perform work package TFC-WO-08-2316 Deliverable: Copy of work record.		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Active
	Perform work package TFC-WO-08-2316 Deliverable: Copy of work record. Reference: Issue 8.1.4 RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS	
Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS	
Poster	^PER Coordinator (Owen, Annette) - 05/26/2009 1101
	Due Date Extension
	Extend CA .27 to 7/25/09 per e-mail request. The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg

TASK DUE DATE HISTORY			
Modified	05/26/2009 1101 - ^PER Coordinator	**New Due Date**	07/25/2009 0000

Task# WRPS-PER-2008-0167.27			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	05/27/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0167.28

E-STARS[R] Report
Task Detail Report
07/08/2009 1025

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.28		
Subject	WRPS-PER-2008-0167; RES; Perform work package TFC-WO-08-2317. Deliverable: Copy of work record.		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Perform work package TFC-WO-08-2317. Deliverable: Copy of work record. Reference: Issue 8.1.6 RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Owen, Annette) - 05/26/2009 1101
	Due Date Extension
	Extend CA .28 to 7/25/09 per e-mail request. The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg

TASK DUE DATE HISTORY

Task# WRPS-PER-2008-0167.28			
Modified	05/26/2009 1102 - ^PER Coordinator	**New Due Date**	07/25/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	05/20/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0167.29

E-STARS[R] Report
Task Detail Report
07/08/2009 1025

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.29		
Subject	WRPS-PER-2008-0167; RES; Perform work package TFC-WO-08-2318 Deliverable: Copy of work record.		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Perform work package TFC-WO-08-2318 Deliverable: Copy of work record. Reference: Issue 8.1.10 RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. FW_ Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg 4. Link to PER 5. RE_ WRPS-PER-2008-0167 _RES_.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Glaman, Linda R) - 05/27/2009 1055
	Due Date Extension
	Extend CA .29 per attached email request. LBG The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg for M Knight 5-26-09

TASK DUE DATE HISTORY

Task# WRPS-PER-2008-0167.29			
Modified	05/27/2009 1056 - ^PER Coordinator	**New Due Date**	07/25/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	05/27/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0167.30

E-STARS[R] Report
Task Detail Report
07/08/2009 1026

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.30		
Subject	WRPS-PER-2008-0167; RES; Perform work package WFO-WO-08-0002 to verify lugs on the T-1 transformer a		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Perform work package WFO-WO-08-0002 to verify lugs on the T-1 transformer are rated for 75C. Document acceptability of breaker in MCC-E-001 or prepare work package to replace it. Deliverable: Copy of work record documenting verification of lugs and disposition on MCC-E-001. Reference: Issue 8.1.14 RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Owen, Annette) - 05/26/2009 1101
	Due Date Extension
	Extend CA .30 to 7/25/09 per e-mail request. The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg

Task# WRPS-PER-2008-0167.30

TASK DUE DATE HISTORY

Modified	05/26/2009 1102 - ^PER Coordinator	**New Due Date**	07/25/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	04/27/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0167.31

E-STARS[R] Report
Task Detail Report
07/08/2009 1027

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.31		
Subject	WRPS-PER-2008-0167; RES; Perform work package TFC-WO-08-2319 Deliverable: Copy of work record.		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/12/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Perform work package TFC-WO-08-2319 Deliverable: Copy of work record. Reference: Issue 8.1.15 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 08/05/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 08/09/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. Request to Extend WRPS-PER-2008-0167_2__4__7__22__31 _RES_.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Owen, Annette) - 05/28/2009 1558
	Due Date Extension
	Extend WRPS-PER-2008-0167.31 - Please assign a new due date of August 5, 2009. Work is dependant upon SY Farm outage schedule. D Bragg

TASK DUE DATE HISTORY

Modified	05/28/2009 1559 - ^PER Coordinator	**New Due Date**	08/05/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	06/02/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000

Task# WRPS-PER-2008-0167.31

SUB TASK HISTORY

No Subtasks

-- end of report --

Message

From: Bragg, David A

Sent: Thursday, May 28, 2009 3:52 PM

To: ^WRPS Corrective Action Group

Cc: Knight, Mark A; Brooks, Rocky L; Owen, Annette

Subject: Request to Extend WRPS-PER-2008-0167.2/.4/.7/.22/.31 (RES)

Per direction of Mark Knight, please extend the following corrective actions:

WRPS-PER-2008-0167.2 - Please assign a new due date of July 8, 2009. Work has been completed, however additional time is required to finish review and to complete/process paperwork

WRPS-PER-2008-0167.4 - Please assign a new due date of July 8, 2009. Work has been completed, however additional time is required to finish review and to complete/process paperwork

WRPS-PER-2008-0167.7 - Please assign a new due date of July 8, 2009. Work has been completed, however additional time is required to finish review and to complete/process paperwork

WRPS-PER-2008-0167.22 - Please assign a new due date of August 18, 2009. Material (breakers) has been procured but not yet received. Additional time is required for material delivery and to perform fieldwork.

WRPS-PER-2008-0167.31 - Please assign a new due date of August 5, 2009. Work is dependant upon SY Farm outage schedule.

Thank you,

David Bragg
Base Operations Maintenance Engineering

Task# WRPS-PER-2008-0167.32

E-STARS[R] Report
Task Detail Report
07/08/2009 1027

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.32		
Subject	WRPS-PER-2008-0167; RES; Perform work package (reference new work request TFC-WO-08-0456) to determine the 242-S K-1 fan motor wire size and type.		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/23/2009
Reference	WRPS-PER-2008-0167	**Due**	06/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Perform work package (reference new work request TFC-WO-08-0456) to determine the 242-S K-1 fan motor wire size and type. Deliverable: Copy of work record documenting the 242-S K-1 fan motor wire size and type. Reference: Issue 8.1.17 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Ficklin, Jim - Assign - Completed with comments - 03/26/2009 1452 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/22/2009 1345 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.32 DNFSB Item 8.1.17.msg

COMMENTS

Poster	Ficklin, Jim - 03/26/2009 1452
	Completed
	Corrective action complete. Visual inspection of the K1-5-3 motor at 242-S this morning (3/19/09) confirms the leads are landed to the motor via split-bolt connectors (which are part of the motor manufacturing process). As there are no lugs, the question of lug temperature rating is moot and the issue should be considered closed. Please see attached e-mail for additional information & concurrence from PER owner/delegate.

Task# WRPS-PER-2008-0167.32

Poster	Knight, Mark A (Bragg, David A) - 04/22/2009 1345		
	Concur		
	Visual inspection of the K1-5-3 motor at 242-S confirmed that the leads are landed to the motor via split-bolt connectors (part of the manufacturing process). As there are no lugs, the issue of lug temperature rating is not relevant. Work request TFC-WR-08-0456 was replaced with work packageTFC-WO-09-0043, which will now be cancelled. No further actions are required. The PER originator declined involvement in the disposition of WRPS-PER-2008-0167 corrective actions.		
Poster	^PER CAs (Owen, Annette) - 04/23/2009 0723		
	CLOSED		
	Closure statement is adquate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	06/01/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Message

From: Triggs, Michael K
Sent: Thursday, March 26, 2009 2:15 PM
To: Ficklin, James W (Jim)
Subject: DNFSB Item 8.1.17

Jim - Please cancel work order TFC-WO-09-0043. The issue is no longer relevant.

Thanks,
Mike

From: Nelson, Richard E
Sent: Thursday, March 19, 2009 11:56 AM
To: Coleman, George J; Bryden, Michael J; Hamm, Earnest R
Cc: Bryant, William H; Triggs, Michael K
Subject: RE: DNFSB Item 8.1.17

Thanks George, I will take care of the ESTARS action item by having it closed per you email. Along the same lines, I will update the tracking list on this item designating it as closed. Once again, thanks for all you help.

Rick Nelson

From: Coleman, George J
Sent: Thursday, March 19, 2009 10:54 AM
To: Bryden, Michael J; Hamm, Earnest R; Nelson, Richard E
Cc: Bryant, William H; Triggs, Michael K
Subject: RE: DNFSB Item 8.1.17

Ernie, et. al.,

Visual inspection of the K1-5-3 motor at 242-S this morning confirms the leads are landed to the motor via split-bolt connectors (which are part of the motor manufacturing process). As there are no lugs, the question of lug temperature rating is moot and the issue should be considered closed.

The wire between the safety switch and the motor is the same as the wire upstream of the safety s (details below) thus it is in compliance with the 75 deg C requirement.

George Coleman

From: Bryden, Michael J
Sent: Thursday, December 04, 2008 3:44 PM
To: Coleman, George J; Hamm, Earnest R
Cc: Bryant, William H
Subject: RE: DNFSB Item 8.1.17

George,

At the time of manufacture of the 250AF/150AT circuit breaker the termination provisions would have been 75 degrees C. Since the cable and terminal provisions are rated 75 degrees C for the #4 wire run

between the circuit breaker and safety switch the 75 degree C column can be used in Table 310.16 of the NEC. Using this column the maximum allowable amperage is 85. The calculated amperage required for the motor is 81. Therefore, this section of wire meets NEC requirements.

There is a second section of wire between the safety switch and the motor. This section needs to be examined to determine:

- wire size and type
- termination provision temperature ratings for the motor

The wire size between the safety switch and motor is not indicated on the drawing, however, if it is #4 the same issue is applicable to this section of wire.

Mike Bryden

From: Coleman, George J
Sent: Thursday, December 04, 2008 2:02 PM
To: Hamm, Earnest R; Bryden, Michael J
Cc: Bryant, William H
Subject: DNFSB Item 8.1.17

Ernie, Mike,

1. By visual inspection, the cable to the K1-5-3 exhauster is marked THHN/THWN in accordance with the construction spec, qualifying it for the 75 deg. C rating thus making it acceptable for the installation.
2. By visual inspection, the disconnect at the fan motor is a Square D unit labeled for 75 deg. C applicability thus making it acceptable for the installation.
3. The lugs on the breaker end of the cable are not marked but are easily replaceable thus an appropriately marked item may be installed to satisfy the requirement.

George Coleman

Task# WRPS-PER-2008-0167.33

E-STARS[R] Report
Task Detail Report
07/08/2009 1028

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.33		
Subject	WRPS-PER-2008-0167; RES; Prepare ECN to document the 242-S K-1 fan motor wire size and type. Deli		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	07/20/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Prepare ECN to document the 242-S K-1 fan motor wire size and type. Deliverable: Electronic copy of released ECN. Reference: Issue 8.1.17 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nguyen, Toan H - Assign - Awaiting Response - Due Date - 07/13/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/17/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ Extension Request for WRPS-PER-2009-0167_33.msg 5. RE_ WRPS-PER-2008-0167 _RES_.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	^PER Coordinator (Glaman, Linda R) - 06/22/2009 0820
	Due Date Extension
	extend CA .33 to 7-13-2009 per attached email request. LBG xtend To: 07/13/2009 Justification: Additional time is required to document 242-S K-1 fan motor wire size and type and to prepare and release ECN. T Jones for Mark Knight 6-18-09

TASK DUE DATE HISTORY

Task# WRPS-PER-2008-0167.33			
Modified	06/22/2009 0820 - ^PER Coordinator	**New Due Date**	07/13/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	06/24/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Message

From: Jones, Teresa E (Terry)
Sent: Thursday, June 18, 2009 3:47 PM
To: ^WRPS Corrective Action Group
Subject: RE: Extension Request for WRPS-PER-2009-0167.33

WRPS-PER-2008-0167.33. Sorry!

From: ^WRPS Corrective Action Group
Sent: Thursday, June 18, 2009 3:46 PM
To: Jones, Teresa E (Terry); ^WRPS Corrective Action Group
Cc: Knight, Mark A; Nguyen, Toan H
Subject: RE: Extension Request for WRPS-PER-2009-0167.33
Importance: High

WRPS-PER-2009-0167 is a closed TUF. There are no corrective actions to extend.

Thanks...As always, please call if you have questions

Linda RB Glaman
Operations Support Specialist/CAM
Turning 'round-n-'round downtown
539-2771

"The only stupid question is the one that remains unasked"

From: Jones, Teresa E (Terry)
Sent: Thursday, June 18, 2009 2:25 PM
To: ^WRPS Corrective Action Group
Cc: Knight, Mark A; Nguyen, Toan H; Jones, Teresa E (Terry)
Subject: Extension Request for WRPS-PER-2009-0167.33

Extend To: 07/13/2009

Justification: Additional time is required to document 242-S K-1 fan motor wire size and type and to prepare and release ECN.

Resp. Mgr: Mark Knight

Task# WRPS-PER-2008-0167.34

E-STARS[R] Report
Task Detail Report
07/08/2009 1029

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.34		
Subject	WRPS-PER-2008-0167; RES; Perform work package CLO-WO-08-2367 Deliverable: Copy of work record.		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	08/01/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Perform work package CLO-WO-08-2367 Deliverable: Copy of work record. Reference: Issue 8.5.5.6 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Ficklin, Jim - Assign - Withdrawn - 01/19/2009 1550 *Instructions:*	
	• Knight, Mark A - Review - Withdrawn - 01/19/2009 1550 *Instructions:*	
	• Brooks, Rocky L - Assign - Awaiting Response - Due Date - 07/25/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/29/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. Request to Extend WRPS-PER-2008-0167 Corrective Actions.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Task# WRPS-PER-2008-0167.34

Poster	^PER CAs (Owen, Annette) - 01/19/2009 1551
	Transfer assign form Ficklin to Brooks per form A-6003-227.
	Transfer ownership due to facility manager responsibilities. Rick Nelson for Jim Ficklin and Rocky Brooks per telecon
Poster	^PER Coordinator (Owen, Annette) - 05/26/2009 1102
	Due Date Extension
	Extend CA .34 to 7/25/09 per e-mail request. The work associated with the corrective actions above will not begin until the next electrical outage at SY Farm, presently scheduled to begin in mid-June. Following completion of the electrical outage, work packages will undergo post work review and paperwork will be closed out. The extension will allow sufficient time to complete the facility modification and to review/closeout the work packages. D Bragg

TASK DUE DATE HISTORY

Modified	05/26/2009 1102 - ^PER Coordinator	**New Due Date**	07/25/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	05/27/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0167.35

E-STARS[R] Report
Task Detail Report
07/08/2009 1030

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.35		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN-726036-R0 to document SY Farm transformer loads and nameplate data is released. Deliverable: Electronic copy of		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 02/13/2009
Reference	WRPS-PER-2008-0167	**Due**	02/24/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Ensure ECN-726036-R0 to document SY Farm transformer loads and nameplate data is released. Deliverable: Electronic copy of released ECN. Reference: Issue 8.6.2.3 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 02/13/2009 1326 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 02/13/2009 1331 *Instructions:*	

ATTACHMENTS

Attachments	1. CH2M-PER-2008-0167.35 CLOSURE ECN-726036-R0.pdf 2. DNFSB Electrical Letter Attachment.pdf 3. DNFSB Electrical Letter.pdf 4. Link to PER 5. RE_ WRPS-PER-2008-0167 _RES_.msg 6. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 02/13/2009 1326
	Completed
	ECN-726036-R0 was completed and released on December 29, 2008, and is attached as objective evidence. No further action is required. The PER originator declined involvement in the closure of the PER.
Poster	Knight, Mark A (Bragg, David A) - 02/13/2009 1331
	Concur

Task# WRPS-PER-2008-0167.35

	The required action is completed with the release of ECN-726036-R0. The PER originator declined involvement in the disposition of this corrective action. No further actions are required.		
Poster	^PER CAs (Owen, Annette) - 02/13/2009 1457		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	02/24/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

S

CH2M HILL ENGINEERING CHANGE NOTICE

☒ DM ☐ FM ☐ TM

1a. ECN 726036 R 0

1b. Proj. ECN - - R

2. Simple Modification ☒ Yes ☐ No	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date 12/8/2008
5. Originator's Name, Organization, MSIN, & Phone No. Rick Nelson, BO Eng., S5-07, 372.9706`	6. PrHA Number No. 00601 R - 0 ☐ N/A	7. USQ Number No. TF - 08 - 1987 - D R - 0 ☐ N/A	8. Related ECNs ECN 724647 R0
9. Title Revise the panel schedule loading for SY241-EDS-DP-105 per Engineering Walkdown	10. Bldg. / Facility No. SY241	11. Equipment / Component ID SY241-EDS-DP-105	12. Approval Designator N/A
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) H-14-030031 Sheet 12 Rev. 5		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number N/A	16b. Modification Work Completed N/A Responsible Engineer / Date	16c. Restored to Original Status (TM) N/A Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

Problem: RPP-RPT-38265 item 8.6.2.3 for SY Farm recommends to verify the loads assigned to panel DP-105 as recorded on H-14-030031 sheet 12. Per the calculation the panel loading is 158% of the transformer rating.

Solution: Per Engineering walkdown the panel loading on panel SY241-EDS-DP-105 needs to be revised per the attached design media. All loads on panel SY241-EDS-DP-105 were verified with an ammeter on a cold day with all the heaters running and current readings obtained. For circuit 3, ECN 724647 R0 disconnected and removed the loads prior to Engineering Walkdown.

Analysis: It is recommended as a result of this Document Modification that RPP-8185 be revised to capture these changes. These changes as designed will have no adverse effect on loading of this buss; it will in fact lower the loading on SY241-EDS-DP-105 in SY Farm.

H-14-030031 Sht 12 shows the loading on the transformer

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No

Training Impact ☐ Yes ☒ No

With the implemnation of this Document Modification item 8.6.2.3 of RPP-RPT- 38265 for SY farm will be addressed and corrected.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
Mark Roberts	S5-07		
Ken Ewer	S5-07		
Gary Tardiff	S5-25		

Release Stamp

DATE: DEC 29 2008
HANFORD RELEASE
STA: 4 ID: 8

CH2M HILL ENGINEERING CHANGE NOTICE	1a. ECN 726036 R 0
Page 2 of 4 ☒ DM ☐ FM ☐ TM	1b. Proj. ECN - - R

22. **Revisions Planned** (Include a brief description of the contents of each revision)
N/A

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. **Commercial Grade Item Dedication Numbers** (associated with this design change)
N/A

24. **Engineering Data Transmittal Numbers** (associated with this design change, e.g., new drawings, new documents)
N/A

25. **Other Non Engineering (not in HDCS) documents that need to be modified due to this change**

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	N/A		
Operations Procedure	N/A		
Maintenance Procedure	N/A		

26. **Field Change Notice(s) Used?**
☐ **Yes** ☒ **No**
If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. **Design Verification Required?**
☐ **Yes** ☒ **No**
If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. **Approvals**

Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	Rick Nelson	12/9/08	Originator/Design Agent		
Resp. Manager	Mark Roberts	12/19/08	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	Ken Ewer	12/11/08	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

CH2MHill ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 3 of 4	☒ DM ☐ FM ☐ TM	1a. ECN-726036 R0 1b. Proj. ECN N/A

WAS:

Document/Drawing No. H-14-030031 Sheet 12 Revision 5

(Note: A separate ECN Continuation page shall be used for each document/drawing to be modified.)

DWG NO H-14-030031 SH 12 OF REV 5

PANEL MFG: SQUARE-D
PANEL TYPE (MODEL): TYPE NQOB (QBMJ0823)
MAIN BRKR TYPE: SQUARE-D, TYPE A1B

PANELBOARD: SY241-EDS-DP-105 LOCATION: VENTILATION EQUIPMENT PAD VOLTAGE: 120/240VAC, 1PH, 3W
FED FROM: SY241-EDS-MCC-002, COMPT A1 ONE LINE DWG NO: H-14-030031 SH 2
NEMA TYPE: 3R ☒ MAIN BREAKER 30 AMP BUS ☐ PANELBOARD GROUND FAULT PROTECTION
☒ SURFACE MOUNT ☐ LUGS ONLY 30 AMP NEUT ☐ OTHER
☐ FLUSH MOUNT ☐ TOP ☒ BOTTOM FEED ☐ GROUND BUS

FEEDER BRKR TYPE: N/A (FUSES, FUSETRON FRS-10)
MAIN BRKR RATING (AIC): 10,000
FEEDER BRKR RATING (AIC): N/A

REMARKS	SCHEME NUMBER	WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
SY241-VTP-YYC-300		50		D/P PLC ENCL SY241-VTP-ENCL-123		1	20	20	2		ANNULUS EXHAUST CONTROL	500			
		375	375	ANNULUS EXHAUST FILTER TRAIN INSTRUMENT ENCLOSURE SY241-VTA-HTR-701		3	15	20	4		ANN EXH FILTER TRAIN INST ENCL PAN. AND MISC RCPTS		1040		SY241-VTA-ENCL-700 (GFCI)
							20	20	6		SY241-VTP-ENCL-123 GFCI RECEPTACLE, PLC HEATERS, PLC CIRCULATION FAN	1800			SY241-VTP-RCPT-123, SY241-VTP-HTR-123A, 123B, SY241-VTP-F-123
			2100	FLUSH PTS A & B HEATER CONTROL PANELS SY27A-RW-CP-201 & SY27B-RW-CP-201		7	20	20	8		SPARE				
				MAIN BREAKER		9	30								GFEP
	SUBTOTAL	425	2475								SUBTOTAL	2300	1040		

TOTAL WATTS PHASE A: 2725
TOTAL WATTS PHASE B: 3515
TOTAL: 6240

SUPERSEDES DRAWING
H-2-85314, SH 2, REV 0

ESSENTIAL DRAWING

REFERENCES	
H-2-99294	FREEZE PROTECTION HEATER CONTROL STATIONS
H-2-37736	ELECTRICAL DETAILS
H-2-37735	ELECTRICAL ELEMENTARY DIAGRAMS
REF NUMBER	TITLE
NEXT USED ON	H-14-030031 SH 6

REVISIONS				
REV NO	DESCRIPTION	REV BY DATE	ENGR	COMPANY
5	INC ECN 668933, NO DWG CHANGE.	ORR 7/02		

NAME	DATE
VL BENDER	
PATI F ULK	
MR QUERR	
RE LARSON	
RW REED	

U.S. DEPARTMENT OF ENERGY
Office of River Protection

ELECTRICAL (EDS)
PANELBOARD SCHEDULE

SIZE B | FILE NO 241SY | INDEX NO 7304 | DWG NO H-14-030031 | REV 5
SCALE NONE | REF ECN 647665 | SHEET 12 OF

PLOTID

A-6003-565 (01/03)

CH2MHill ENGINEERING CHANGE NOTICE CONTINUATION SHEET	☒ DM ☐ FM ☐ TM	1a. ECN-726036 R0
Page 4 of 4		1b. Proj. ECN N/A

IS:

Document/Drawing No. H-14-030031 Sheet 12 Revision 5

(Note: A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

DWG NO H-14-030031 SH 12 OF REV 5

PANEL MFG: SQUARE-D
PANEL TYPE (MODEL): TYPE NQOB (QBM30822)
MAIN BRKR TYPE: SQUARE-D, TYPE A1B

PANELBOARD: SY241-EDS-DP-103 LOCATION: VENTILATION EQUIPMENT PAD VOLTAGE: 120/240VAC, 1PH, 3W
FED FROM: SY241-EDS-MCC-002, COMPT A1 ONE LINE DWG NO: H-14-030031 SH 2

NEMA TYPE: 3R ■ MAIN BREAKER 30 AMP BUS ☐ PANELBOARD GROUND FAULT PROTECTION
■ SURFACE MOUNT ☐ LUGS ONLY 30 AMP NEUT
☐ FLUSH MOUNT ☐ TOP ■ BOTTOM FEED ☐ GROUND BUS ☐ OTHER

FEEDER BRKR TYPE: N/A (FUSES, FUSETRON FRS-10)
MAIN BRKR RATING (AIC): 10,000
FEEDER BRKR RATING (AIC): N/A

REMARKS	SCHEME NUMBER	WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
SY241-VTP-YYC-300		50		D/P PLC ENCL SY241-VTP-ENCL-123		1	20	20	2		ANNULUS EXHAUST CONTROL	500			
				SPARE		3	15	20	4		AND MISC RCPTS		1040		SY241-VTA-ENCL-700 (GFCI)
			1500	FLUSH PITS A & B HEATER CONTROL PANELS SY7PA-RW-CP-201 & SY7PB-RW-CP-201		7	20	20	8		SY241-VTP-ENCL-123, GFCI RECEPTACLE, PLC HEATERS, PLC CIRCULATION FAN	1800			SY241-VTP-RCPT-123, SY241-VTP-HTR-123A, 123B, SY241-VTP-F-123
				MAIN BREAKER		8	30		9		SPARE				
															GFEP
SUBTOTAL		50	1500								SUBTOTAL	2300	1040		

TOTAL WATTS PHASE A: 2350
TOTAL WATTS PHASE B: 2540
TOTAL: 4890

Construction Note: DO NOT INCORPORATE

THE LOAD FOR BREAKER #3 WAS DISCONNECTED ON ECN 724847 AND NOT INCORPORATED IN THIS REVISION OF THE PRINT. TOTAL LOADING IS BASED ON THE LOAD FOR CIRCUIT 3 BEING DISCONNECTED.

SUPERSEDES DRAWING
H-2-85314, SH 2, REV 0

ESSENTIAL DRAWING

REF NUMBER	TITLE
H-2-99294	FREEZE PROTECTION HEATER CONTROL STATIONS
H-2-37736	ELECTRICAL DETAILS
H-2-37735	ELECTRICAL ELEMENTARY DIAGRAMS

REFERENCES
NEXT USED ON H-14-030031 SH 6

REV NO	DESCRIPTION	REV BY DATE	CHKD	COMPANY
5	INC ECN 668933, NO DWG CHANGE.	ORR 7/02		

REVISIONS

NAME	DATE
DRAWN VJ BENDER	10/96
TRACED PAUL F ULK	10/96
DESIGNED WR QUERR	10/96
QA SE LARSON	11/96
CHK RW REED	11/96
ENGINEER A/R	

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE: ELECTRICAL (EDS) PANELBOARD SCHEDULE

SIZE B | BLDG NO 241SY | SYSTEM NO 7304 | DWG NO H-14-030031 | REV 5
SCALE NONE | REF ECN 647685 | SHEET 12 OF

PLOTID

A-6003-565 (01/03)

Task# WRPS-PER-2008-0167.36

E-STARS[R] Report
Task Detail Report
07/08/2009 1030

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.36		
Subject	WRPS-PER-2008-0167; RES; Revise RPP-RPT-38265 Rev 0 to include an evaluation of all 78 identified electrical discrepancies and to document which of th		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 02/26/2009
Reference	WRPS-PER-2008-0167	**Due**	03/04/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Inactive
	Revise RPP-RPT-38265 Rev 0 to include an evaluation of all 78 identified electrical discrepancies and to document which of these issues require fieldwork to resolve. Deliverable: Electronic copy of RPP-RPT-38265 Rev 1. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Hamm, Earnest R - Assign - Completed with comments - 01/19/2009 1748 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 02/25/2009 1555 *Instructions:*	

ATTACHMENTS	
Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.36 CLOSURE RPP-RPT-38265-R1.pdf

COMMENTS	
Poster	Hamm, Earnest R - 01/19/2009 1748
	Completed
	RPP-RPT-38265 Revision 0 has been updated and releaed as Revision 1. The link below can be used to access the revised document. Ernie Hamm http://idmsweb/idms/livelink.exe/open/141723715

Task# WRPS-PER-2008-0167.36

Poster	Knight, Mark A (Bragg, David A) - 02/25/2009 1555		
	Concur		
	RPP-RPT-38265 has been revised to include the required information. See attachment of Rev 1 of this document for objective evidence. Although declining notification of PER closure, the PER originator was involved with the development and release of the subject document.		
Poster	^PER CAs (Owen, Annette) - 02/26/2009 1322		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	03/04/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

CH2M HILL DOCUMENT RELEASE FORM

(1) Document Number:	RPP-RPT-38265	(2) Revision Number: 1	(3) Effective Date: 01/16/2009
(4) Document Type:	☐ Digital Image ☒ Hard copy ☐ PDF ☐ Video	(a) Number of pages (including the DRF) or number of digital images 63	
(5) Release Type	☐ New ☐ Cancel	☐ Page Change	☒ Complete Revision
(6) Document Title:	Tank Farm Electrical Distribution Studies Issue Status		
(7) Change/Release Description:	Updated to reflect the current status of resolution of the load studiy issues		
(8) Change Justification:	NA		

(9) Associated Structure, System, and Component (SSC) and Building Number:		
	(a) Structure Location: Double Shell Tank Farms	(c) Building Number: 241-AP, AW, AY, AZ, SY, C
	(b) System Designator: NA	(d) Equipment ID Number (EIN): NA

(10) Impacted Documents:	(a) Document Type	(b) Document Number	(c) Document Revision
	NA		

(11) Approvals:

(a) Author (Print/Sign): E.R. Hamm	E.R. Hamm	Date: 1/16/2009
(b) Responsible Manager (Print/Sign): M.A. Roberts	Mark Roberts	Date: 01/16/2009
(c) Reviewer (Optional, Print/Sign): R.E. Nelson	By Telecon E.R. Hamm	Date: 1/16/2009.
(d) Reviewer (Optional, Print/Sign):		Date:

(12) Distribution:

(a) Name	(b) MSIN	(a) Name	(b) MSIN
M.J. Bryden	S5-07	G.J. Coleman	S7-24
E.R. Hamm	R2-58	E.A. Nelson	R2-58
R.E. Nelson	S5-07	M.A. Knight	S5-07
M.A. Roberts	S5-07		

Release Stamp

DATE: JAN 16 2009
STA: 4
HANFORD RELEASE
ID: 2

(13) Clearance	(a) Cleared for Public Release	(b) Restricted Information?	(c) Restriction Type:
	☒ Yes ☐ No	☐ Yes ☒ No	

(14) Clearance Review (Print/Sign): L Fox — JE Fox — Date: 1-16-2009

A-6003-881 (05/05)

TANK FARM ELECTRICAL DISTRIBUTION STUDIES Issues Status

ER Hamm / RE Nelson
Washington River Protection Solutions, LLC.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: UC:
Cost Center: Charge Code:
B&R Code: Total Pages: 63

Key Words: National Electric Code (NEC), Demand Load, Load Flow, Voltage drop, Short Circuit, Protective Device Coordination, Equipment Evaluation, Arc Flash Evaluation, Engineering Evaluation, SKM, PTW

Abstract: This report is the basline eletrical power distribution system studies issues for 241-SY, 241-AW, 241-AP, 241-AY, AZ-701/702, C-109, 241-AZ, and 241-AN.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Release Approval — Date: 1-16-2009

DATE: HANFORD RELEASE
STA: 4 ID:
JAN 16 2009 (2)
Release Stamp

Approved For Public Release

Tank Farm Contractor (TFC) **RECORD OF REVISION**	(1) Document Number: **RPP-RPT-38265**	Page 1

(2) Title:

Tank Farms Electrical Distribution Studies Issues Status

Change Control Record

(3) Revision	(4) Description of Change – Replace, Add, and Delete Pages	Authorized for Release	
		(5) Resp. Engr. (print/sign/date)	(6) Resp. Mgr. (print/sign/date)
1 RS	Updated to reflect the current status of resolution of the load study status	ER Hamm ER Hamm 1/16/2009	MA Roberts See DRF E.R Hamm 1/16/2009

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7.0 AW TANK FARM 21
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LIST OF TABLES

Table 1. Summary Status of Distribution Studies Issues 1
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LIST OF TERMS

FFS	Fluor Federal Services
HP	Horse Power
FLA	Full Load Amperes
NEC	National Electrical Code
PPE	Personal Protective Equipment
PTW	Power*Tools for Windows

1.0 PURPOSE

The purpose of this report is to provide a list of the Tank Farm Electrical Load Studies and track the status and the basis for closure of each issue. The document will be revised as new load studies are performed and issues are closed out.

This document was initiated following a DNFSB review of the Double Shell Tank Farm Electrical System in June 2008.

2.0 SCOPE

Double Shell Tank Farm electrical load study calculations as noted in Table 1. The status and basis for closure for issues identified in electrical load studies for other Tank Farm facilities will be included the next revision of this document.

3.0 SUMMARY OF ELECTRICAL LOAD STUDIES ISSUE STATUS

Table 1. Summary Status of Distribution Studies Issues

	Facility	Calculation Number	Number of Issues	Number Resolved	Number Requiring Field Work	Number Requiring Document Change ECNs
1	AN	RPP-CALC-24467 R.0	12	8	4	0
2	AP	RPP-8182 R. 0	8	2	4	2
3	AW	RPP-8183 R.1	11	7	3	1
4	AY	RPP-CALC-24468 R.0	11	7	4	0
5	701/702	RPP-CALC-24466 R.0	0	0	0	0
6	AZ	RPP-CALC-24465 R.0	0	0	0	0
7	C-109	RPP-CALC-32223 R.0	0	0	0	0
8	SY	RPP-8185 R.0	33	23	10	0
	Totals		75	47	25	3

4.0 SOFTWARE VERIFICATION AND VALIDATION (V&V)

The Software verification and Validation (V&V) table provides the SKM Power Tools for Windows* Software Version and the referenced V&V documentation for each electrical load study.

Table 2. Software Verification and Validation

	Contractor	Calculation Number	Software Used	Software Version Number	V&V Document Number	Comments
1	Fluor Federal Services	RPP-8182 R. 0	SKM Power*Tools	3.8.1.0 Build 2 Version 4.0.0.0 Beta 6	RPP-9886 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
2	Fluor Federal Services	RPP-8183 R.1	SKM Power*Tools	5.0.2.8 Build 2	HNF-26563 Rev. 0	
3	Fluor Federal Services	RPP-8185 R.0	SKM Power*Tools	3.8.1.0 Build 2 4.0.2.6 Build 1	RPP-9886 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
4	Fluor Federal Services	RPP-CALC-24465 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
5	Fluor Federal Services	RPP-CALC-24466 R.0	SKM Power*Tools	5.03.0 Build 1	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
6	Fluor Federal Services	RPP-CALC-24467 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
7	Fluor Federal Services	RPP-CALC-24468 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
8	ARES Corporation	RPP-CALC-32223 R.0	SKM Power*Tools	Version 6.0.2.8	VV-07-07-004	

5.0 AN TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24467 Rev 0	06/21/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	3	0	0	3
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	1	1	0	0
4	Short Circuit Study	2	2	0	0
5	Protective Device Coordination	4	1	0	3
6	Equipment Evaluation Report	2	0	0	2
7	Arc Flash Evaluation Study	0	0	0	0
	Total	12	4	0	8

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Supernatant pump AN06A-WT-P-016 has a 25 HP motor. The NEC FLA for a 25 HP motor is 34A. The motor branch circuit conductors are shown as #8 AWG. The NEC rated ampacity for #8 conductors is 40A @ 60 deg. C (Table 310.16). NEC article 430.22 requires that the motor conductors be rated at 125% of the motor FLA (34 x 1.25 = 42.5A). The 60 deg. C ampacity of the #8 conductors is inadequate for the 40HP motor.	1) Verify conductor termination and equipment is rated for 75 deg. C (50A ampacity of # 8 conductors); or 2) Replace the #8 motor circuit conductors with #6 AWG conductors (55A).	Resolved	The cabinet is compliant with UL-508A, "Industrial Control Panel" Section 29.6(a), internal wiring sizing. This section use 100% FLA for sizing the wires. The Field wiring from the MCC terminal strip to the load is #6 AWG which is good for 55Amp. The field installation is NEC compliant. No further action required ECN-723859, Rev.0 changed Drawing H-14-030001, sh.2 to show #6AWG connected to AN06A-WT-P-016 Reference: H-14-030001, sh.2, R.13
8.1.2	Annulus exhaust fan AN241-VTA-EF-003 is shown as 10 HP. The NEC FLA for a 10 HP motor is 14A. NEC article table 430.52 requires that the maximum trip rating of a breaker supplying a single motor be 250% of the FLA (14 x 2.5 = 35A), unless that breaker does not permit the motor to start. Therefore, unless there is a historical starting problem, breaker BKR-118 (50A) is in violation of the NEC.	Replace BKR-118 with a breaker rated at 35A, maximum.	Resolved	The field configuration indicated the breaker is 30A breaker. Drawing H-14-030001, sh.3, R.6 have been changed by ECN-723859, R.0 to reflect field configuration Reference: H-14-030001, Sh.3, Rev.6 PER 2005-2613 and ECN: 723859 Rev.0
8.1.3	Building AN273 coolant pump control panel AN273-GLY-CP-101 is supplied from fused disconnect switch AN273-GLY-DS-101. One line diagram H-14-030001 Sh. 2 Rev 10 and elementary diagram H-14-030301 Sh. 1 Rev 1 indicate 30A fuses in the switch. Plan drawing H-2-93194 Sh. 1 Rev 1 indicates #12 conductors on the load side of disconnect switch. The 30A fuses do not provide adequate over current protection (20A) for the #12 conductors in accordance with NEC 240.4.D. And the 30A fuses exceed the over current protection allowed by NEC 430.62.	Verify conductor size. If conductors are #12, replace fuses with 20A units.	Resolved	The field configuration indicated that 15A fuses are installed, the 15A fuses provide adequate over current protection for #12 conductors Reference: H-14-030001. sh.2, Rev.13 PER 2005-2613 ECN: 723859 Rev.0.

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Issue #	Demand Load Issues	Recommendations	Status	Comment
NA	NA	NA	NA	NA

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.4	The voltage drop calculation indicates the following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus: Bus Voltage Drops > 8.3% (480V Assumed at Utility Transformer Secondary Bus) Component Name: High Phase Voltage Drop (%): Comment BUS-DP-105: 9.48: Verify loads on DP-105 XFMR-102-SEC: 9.41:	NA	Field Work Required	Power to the SHIMS cabinets has been removed (Breakers Opened) , thereby reducing the calculated voltage drop from 9.48% to 4.79%. ECN -725722 R.0 has been prepared to lift leads and de-energize DP-105 References: H-14-030001, Sh.1, Rev. 13 H-14-030001, Sh.11, Rev.9 ECN-725722, Rev.0

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
8.4.4	Disconnect switch AN273-EDS-DS-112 is non-fused. The nominal short circuit rating for a non-fused disconnect switch is 10kA. The calculated short circuit current at the switch location is approximately 15.6 kA.	Fused disconnect switches assume the short circuit ratings of the installed fuse. Replace DS-112 with a 100A fused disconnect switch with 90A fuses suitable for the available short circuit current.	Field Work Required	Change the switch from a non-fused to a fused switch. Work Package TFC-WO-08-0276 ECN ECN-725990-R0 - -Released Work package is Ready To Work Reference: H-14-030001, Sh.2, Rev.13

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<table>
<tr><th>Issue #</th><th>Short Circuit Study Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr>
<td>8.4.5</td>
<td>Disconnect switch AN241-EDS-DS-120 is non-fused. The nominal short circuit rating for a non-fused disconnect switch is 10kA. The calculated short circuit current at the switch location is approximately 15.8 kA.
<table>
<tr><th colspan="2">Switch</th><th colspan="2">Fuse</th><th rowspan="2">Calculated Short Circuit Current (kA)</th><th rowspan="2">Comment</th></tr>
<tr><th>PTW Name</th><th>PTW Name</th><th>Rating (kA)</th></tr>
<tr><td>DS-100</td><td>FU-DS-100</td><td>10</td><td>18.5</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
<tr><td>DS-113</td><td>FU-DS-113</td><td>10</td><td>15.6</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
<tr><td>DS-127</td><td>FU-DS-127</td><td>200</td><td>17.9</td><td>Assumed Fuse Type (Bussmann FRS). Verify.</td></tr>
<tr><td>VT-DS-101</td><td>FU-VT-DS-101</td><td>10</td><td>15.6</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
</table>
</td>
<td>Fused disconnect switches assume the short circuit ratings of the installed fuse. Replace DS-120 with a 100A fused disconnect switch with 100A fuses suitable for the available short circuit current.
Numerous other disconnect switches are noted in the PTW Equipment Evaluation report to be applied beyond their short circuit rating. This evaluation is based upon the non-fused rating (10kA) of the switch. However, the short circuit rating of a fused-disconnect switch is that of the fuse, and in some cases, a non-fused disconnect switch may be protected by an upstream fuse. For each of the fused disconnect switches applied at a location with short circuit current greater than 10kA, fuse ratings must evaluated to determine adequacy of the fused switch. All fused switches in this study are adequately protected by their fuses with exception of those in the following table. Lacking specific information for these fuses, assumed fuse types were utilized. Actual installed fuse types should be determined and evaluated for suitability considering the available short circuit current.</td>
<td>Field Work Required</td>
<td>Change the switch from a non-fused to a fused switch.
Work package TFC-WO-08-0277
ECN-725995-R0-- Released
Work package is Ready To Work
Reference:
H-14-030001, Sh.2, Rev.13
H-14-030001, Sh.1, Rev.24</td>
</tr>
</table>

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.3.1	General – Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at MCC-001, MCC-002, DP-103, for example.	NA	NA	NA
8.5.3.2	MCC-001 feeder fuse FU-DS-127 (400A) does not coordinate with existing settings of MCC-001 main breaker BKR-101 for feeder overcurrents above approximately 2kA (Ref. TCC MCC-001 in Appendix E). Overcurrents greater than 2kA on the feeder supplying DP-130 and the exhauster skids will trip the MCC-001 main breaker. Short circuit current at DP-130 exceeds 9kA.	1) Raise the short time pickup setting of BKR-101 to its maximum setting of 8x (8000A). This will provide improved coordination up to approx 7kA. A STPU setting of 5x (5000A) or greater on BKR-101 will miscoordinate with the existing STPU setting (4800A) of upstream breaker BKR-100, so BKR-100 STPU would have to be raised to at least 8x (9600A)(Ref. TCC DP-130-MAIN(1) in Appendix E); or 2) Replace the 400A fuse with a circuit breaker with characteristics more closely matching the upstream breakers (Ref. TCC DP-130-MAIN (2) in Appendix E).	Field Work Required F5.1	Update the trip settings for BKR 100 and 101. Reference: H-14-030001, Sh.1, Rev.24 PM# WDL-110-523 Work Package is Ready To Work?
8.5.3.3	Panel DP-130 main breaker does not selectively coordinate with upstream fuse FU-DS-127 nor the MCC-001 main breaker BKR-101 for overcurrents greater than approximately 2kA (Ref. TCC DP-130-MAIN in Appendix E). See also 0 above.	Raise the short time pickup setting of BKR-101 to at least 3x (3000A) to provide coordination with the DP-130 main breaker.	Resolved	Same breaker as 8.5.3.2. BKR 101 will be set to 8000 amps which is well above the recommended 3000 amp. See 8.5.3.2 above

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<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.3.4</td><td>Fuse FU-DS-117 in disconnect switch DS-117 does not selectively coordinate with MCC-001 main breaker BKR-101 for overcurrents greater than approximately 2kA (Ref. TCC DS-117 in Appendix E). The short time pickup setting (2000A) of BKR-101 does not allow coordination with the 200A feeder fuse.</td><td>Raise the short time pickup setting of breaker BKR-101 to at least 4kA. See also 0 above.</td><td>Resolved</td><td>Same breaker as 8.5.3.2.
BKR 101 will be set to 8000 amps which is well above the recommended 3000 amp.
See 8.5.3.2 above</td></tr>
<tr><td>8.5.3.5</td><td>Where identical branch circuits are protected by the same device, a TCC was generated for only one.</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>8.5.3.6</td><td>Although they meet the NEC requirements for overcurrent protection, comparison of the cable thermal damage curve with the time-current characteristics of the upstream protective device indicates the following cables may not be adequately protected from damage throughout the entire range of overcurrent from overloads to short circuits. Cable damage temperature is assumed to be 150 deg. C with an initial operating temperature of 75 deg. C. Field verification of installed cable insulation type may be warranted.
<table>
<tr><th></th><th>Cable Name</th><th>Reference TCC</th><th>Wire Size</th><th>Protective Device (Upstream)</th><th>Comment</th></tr>
<tr><td>1</td><td>CBL-BKR-105LD</td><td>BKR-105</td><td>10</td><td>BKR-105
C-H HFD 30A</td><td></td></tr>
<tr><td>2</td><td>WR82</td><td>BKR-118</td><td>10</td><td>BKR-118
C-H HFD 50A</td><td>Motor Circuit</td></tr>
<tr><td>3</td><td>WR85</td><td>BKR-121</td><td>12</td><td>BKR-121
C-H HFD 15A</td><td></td></tr>
<tr><td>4</td><td>WR87</td><td>BKR-122</td><td>12</td><td>BKR-122
C-H HFD 20A</td><td></td></tr>
<tr><td>5</td><td>WR228</td><td>BKR-123</td><td>12</td><td>BKR-123
C-H HFD 15A</td><td></td></tr>
<tr><td>6</td><td>WR229</td><td>BKR-124</td><td>12</td><td>BKR-124
C-H HFD 15A</td><td></td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc.</td></tr>
</table>

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Issue #	Protective Device Coordination Issues						Recommendations	Status	Comment
	7	WR572	BKR-130	10	BKR-130 C-H HFD 30A				purpose and guidelines for basic over current protection philosophy for insulated power cables IEEE 242-2001 chapter 9 Cable ProtectionH-14-030001, Sh.1, Rev.24 H-14-030001, Sh.2, Rev.13 H-14-030001, Sh.3, Rev.6
	8	CBL-BKR-351	BKR-350	8	BKR-350 Sq-D FA 100A	Tap Conductor, downstream protection.			
	9	CBL-BKR-451	BKR-450	8	BKR-450 Sq-D FA 100A	Tap Conductor, downstream protection.			
	10	WR138	DP-103-13	12	DP-103-13 C-H FD 20A				
	11	WR139	DP-103-14	12	DP-103-14 C-H FD 20A				
	12	CBL-DS-111	DP-104	12	DP-103-37 C-H FD 15A				
	13	WR93	DP-107-11	12	BKR-DP107-11 C-H HFD 20A				
	14	WR94	DP-107-12	12	BKR-DP107-12 C-H HFD 20A				
	15	WR00-76	DP-112	8	BKR-132 C-H HFD 100A	Not NEC compliant if tap > 25 ft length. Verify tap conductor length.			
	16	WR210-E	DP-129-MAIN	6	DP-130-6 Sq-D FC 40A	Tap conductor, downstream protection.			

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Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.1.2	Protective equipment evaluation based upon load flow current indicates the following protective equipment is applied beyond its continuous current rating:	NA	Resolved	The active loads for these devices are well below the calculated values shown in the table, and below the Ampere Interrupt Capability rating for the protective devices. This condition is considered acceptable.

Protective Device Evaluation Continuous Current Ratings Exceeded

	Component Name	Rating Exceeded	Comment
1	BKR-106	365A > 225A rating	DP-103 Feeder Breaker
2	C8X713	1.27A > 1A rating	Utility Transformer Primary Fuse.
3	DP-103-MAIN	365A > 225A rating	Verify DP-103 loads reported on H-14-030001 Sh. 9 rev 4.
4	(Breaker) DP-103-1	21A > 20A rating	Floodlights, poles 1,2,3,7. Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported loads.
5	FU-DS-103	18A > 15A rating	Pole 1-7 Flood Light Circuits. Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported loads.
6	FU-DS-104	18A > 15A rating	
7	FU-DS-105	18A > 15A rating	
8	FU-DS-106	18A > 15A rating	
9	FU-DS-107	18A > 15A rating	
10	FU-DS-108	18A > 15A rating	
11	FU-DS-118	18A > 15A rating	
12	(Breaker) DP-103-13	23A > 20A rating	Impact Wrench Station #1. Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.
13	FU-DS-109	23A > 15A rating	
14	(Breaker) DP-103-14	23.6A > 20A rating	Impact Wrench Station #2. Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.
15	FU-DS-110	23.6A > 15A rating	
16	(Breaker) DP-103-8	70.4A > 60A rating	Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.

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Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.2.1	Non-Protective equipment evaluation based upon load flow current indicates the following equipment is applied beyond its continuous current rating:	NA	Resolved	The calculated load values do not consider demand or diversity factors and the measured loads for this distribution system is significantly lower that the calculated values.

Non Protective Device Equipment Evaluation, Continuous Current Ratings Exceeded

	Device	Criteria Failure	Comment
1	CBL-DP-107	55.4A > 55A Ampacity	Verify Panel DP-107 loads.
2	CBL-SA-CMP-001	42.5A > 40A Ampacity	25 HP motor, NEC FLA = 34A, 125% FLA minimum circuit ampacity = 42.5A. #8 @ 60 deg C ampacity of 40A is insufficient for motor.
3	WR137	70A > 55A Ampacity	
4	WR138	23A > 20A Ampacity	Impact Wrench Station #1 feeder. See 8.6.1.2.
5	WR139	23.6A > 20A Ampacity	Impact Wrench Station #2 feeder. See 8.6.1.2.
6	WR8	363A > 230A Ampacity	DP-103 feeder. See 8.6.1.2.
7	XFMR-102	84A > 78A rating	37.5kVA FLA = 78.1A. DP-105 feeder circuit. Verify DP-105 loads.
8	XFMR-105	23.5A > 20.8A rating	10kVA FLA = 20.8A. DP-107 feeder circuit. Verify DP-107 loads.
9	XFMR-351	23A > 20.8A rating	10kVA FLA = 20.8A. VT-DP-351 feeder circuit. Verify VTP-DP-351 loads.
10	XFMR-451	23A > 20.8A rating	10kVA FLA = 20.8A. VT-DP-341 feeder circuit. Verify VTP-DP-341 loads.
11	XFMR-C6032L	1.27A > 0.7A rating	10kVA Utility Transformer
12	DP-103 Ckt. 1	21A > 20A rating	Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.
13	DP-103 Ckt. 7	66.7A > 60A rating	
14	DP-103 Ckt. 8	66.7A > 60A rating	
15	DP-103 Ckt. 13	23A > 20A rating	

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Issue #	Equipment Evaluation Issues				Recommendations	Status	Comment
	16	DP-103 Ckt. 14	23.6A > 20A rating				
	17	DP-103 Ckt. 26	66.7A > 60A rating				
	18	DP-111 Ckt. 2	33A > 20A rating	Load per panel schedule drawing H-14-030001 Sh. 21 rev 0. Verify reported load.			
	19	DP-112 Ckt. 2	33A > 20A rating	Load per panel schedule drawing H-14-030001 Sh. 22 rev 0. Verify reported load.			

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
8.7.5	The Arc Flash Evaluation indicates all evaluated fault locations in the distribution system produce arc flash incident energy values below 1.2 cal/cm^2 (PPE Class 0) except for the following:	NA	NA	No Actions Necessary

Arc Flash Incident Energy > 1.2 cal/cm^2			
Bus Fault Location	Incident Energy (cal/cm^2)	PPE Class	Comment
BUS-ENCL-100	44.7	Dangerous!!!	Secondary fault cleared by primary fuse.
BUS-GLY-PS-101	19	Class 3	
BUS-WT-P-010	3.28	Class 1	
EDS-MCC-001	3.25	Class 1	
BUS-WT-P-013	2.19	Class 1	
HH-29	1.96	Class 1	
LINE C8-L6	1.84	Class 1	
BUS-DS-127	1.83	Class 1	
BUS-WT-P-005	1.71	Class 1	

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Issue #	Arc Flash Evaluation Study				Recommendations	Status	Comment
	BUS-WT-P-014	1.71	Class 1				
	BUS-WT-P-001	1.56	Class 1				
	BUS-P-101-1A	1.48	Class 1				
	BUS-DS-124	1.44	Class 1				
	BUS-P-101-1	1.36	Class 1				
	BUS-WT-P-020	1.24	Class 1				
	Line Side Fault Location						
	EDS-MCC-001 (BKR-101)	11.9	Class 3				
	BUS-DP-130 (DP-130-MAIN)	3.3	Class 1				

6.0 AP TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8182 Rev 0	08/20/2001	3.8.1.0 Build 2 Version 4.0.0.0 Beta 6	1999	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring Document Change ECN	Issues Resolved
1	NEC Issues	7	3	2	2
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	1	1	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	8	4	2	2

AP TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Panel EDS-DP-101 has no main breaker, and is supplied by conductors from the secondary of transformer XFMR-101, without intervening overcurrent protection. There is no overcurrent protection for the secondary conductors as required by NEC Article 240-21(c). Note, the transformer primary overcurrent device provides transformer protection in accordance with NEC Article 450-3(6), however, required secondary conductor overcurrent protection does not exist.	Install secondary conductor overcurrent protection (fuses or circuit breaker, 110A maximum) between transformer and panelboard.	Resolved	Breaker has been installed per ECN 724298 Rev.0 Reference: H-14-030003 Sh 2 ECN724298
8.1.2	Primary supply circuit for XFMR-104, fed from MCC-002 circuit breaker BKR-136 is #12 copper conductor, MTW/THW. The ampacity of #12 conductor, is 25A (@ 60 & 75 degrees C) per NEC Table 310-16, but additionally are limited to a maximum 20A overcurrent device per NEC 240-3, The 30A circuit breaker BKR-136 does not provide adequate overcurrent protection for the #12 conductors.	Change existing 30A circuit breaker BKR-I36 to be a 20A circuit breaker.	Field Work Required	ECN-726001-R0 is in development. PER-2008-167AP241-EDS-DP-110 has a total load of 8640W per H-14-030003, SH.16. The 8640w load equates to a 18A on the primary conductor. The #12 wire is rated for 20A. There is no immediate hazard but the circuit is not NEC compliant. Replace # 12 wire with #10 Reference: NEC-240-4(d) H-14-030003 Sh. 17, R-2 H-14-030003 Sh. 18, R-2 H-14-030003 Sh. 3, R-11
8.1.3	The feeder circuit breaker BKR-113 in motor control center MCC-001 does not provide adequate overcurrent protection for a portion of the feeders supplying rectifier disconnect switches CATH-DS-100 and CATH-DS-101. Feeders originating from circuit breaker BKR-113 are reported to #10 AWG out to the location of the disconnect switches, but are spliced to #12 AWG conductors prior to terminating	NA	Engineering Document Change (ECN) Required	Tap rules per NEC-240.21(b)(1) apply, the installation is NEC compliance. No further action required. An Engineering Change Notice is required to show this configuration on the drawing Reference NEC-240.21

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	at the line side of the disconnect switches. The maximum allowable overcurrent protection of #12 conductors is 20A (NEC 240-3(d)). BKR-113 is has a 30A trip rating. The #12 conductors are not adequately protected. However, considering exception allowed by NEC 240-21(b) (1), (feeder taps are not over 10 ft.) the installation is NEC compliant.			H-14-030003, Sh.2
8.1.4	The calculated load of EDS-DP-1 04, based upon assumed assigned load and diversity for the receptacle branch circuits, exceeds the ampacity of the incoming feeder conductors, as well as the rating of the incoming feeder breaker. However, the incoming feeder is adequately protected against overcurrent by the feeder breaker BKR-1 17. The assumed loads assigned to the panel branch circuits by this study may be unrealistically excessive. Note: Assumption 6.11, indicates that 4 out of 5 welding receptacles are loaded at 40kw each.	Limit allowable and actual panelboard loading to a maximum of 190 kVA and 230A per phase. Calculated and allowable panelboard loads can be reduced by control of Individual loads, and/or limiting simultaneous use of available receptacles in panelboard EDS-DP-104.	Field Work Required	The configuration in NEC compliant, installation of a main breaker in panel 104 is recommended to improve selective breaker coordination. Work Order WO-08-2309 has been prepared. ECN-725942-R0 Is being Developed. Reference: H-14-03003 Sh1
8.1.5	The calculated design load flow current (31A) on the glycol chiller feeder on the load side of disconnect switch AP273-GLY-DS-1 01 exceeds the ampacity (30A) of the #10AWG feeder conductors. However, calculated load flow current was based upon the loads given by the panel schedule drawing for panel AP273-EDS-DP-108. Examination of the loads assigned by the panel schedule, however, indicates actual loads may be less. The one line diagram indicates the chiller load includes a 10 HP compressor motor, and two 3/4 HP fans. NEC full load amps for these motors is: 14, 1.6, and 1 .6 Amps respectively. Considering 125% of the largest motor, this is a 20.7A load, which equates to 17.2 kVA and 13.8 kW at 80% pf. The panel schedule for this load indicates a 20 kW load. The existing conductors are	Conductor ampacity based upon calculated load using motor ratings as given on one line diagrams is in compliance with NEC. Verify load values on panel schedule EDS-DP-1 08 for Glycol Chiller (Ckt. 1).	Field Work Required	Walkdown is complete. Need to lift lead for Glycol system to remove the loading on Panel DP-108 ECN-726031-R0 has been Released Work Package TFC-08-2656 has been prepared. Ref: H-14-030003 Sh. 2, R-13

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	adequate for the 20.7A load of the three motors, calculated based upon nominal HP rating indicated on one line diagram, and NEC FLA.			
8.1.6	Size of conductors supplying panel AP271-EDS-DP-105 from circuit 32 of AP271-EDS-DP-104 could not be verified during last field walk down (outage required). Documentation depicting the installation of the feeder conductors (and the panel) could not be located. The walk down did, however, verify the rating of the feeder breaker in panel AP271-EDS-DP-104 to be 100A. A #1/0 AWG minimum size conductor is required to carry the calculated load flow for the existing panel DP-1 05 loads. The feeder in this study is represented by #1/0 conductors. While no specific code violation can be noted, based upon the rating (100A) of the feeder breaker in panel AP271-EDS-DP-104, the minimum size of the feeder conductors allowed by code is #1/0 AWG Copper THHN.	Verify size of conductors supplying panel DP-105 to be at least #1/0 AWG.	Engineering Document Change ECN Required	A walk down was performed on 10/6/2008, the conductors from AP271-EDS-DP-104 to panel AP271-EDS-DP-105 is #1 AWG which has an ampacity of 110 A @ 60 degrees C, no NEC violation exists. A document change ECN is required to show the wire size on the drawing. Ref: H-14-030003, Sh.2, Rev.13
8.1.7	Circuit breakers in panel AP241-EDS-DP-110 are mounted in two rows, and oriented in a vertical position. Half of the breakers are arranged such that the UP position of the handle is the "ON" position of the breaker. This is a violation of NEC article 240-81.	Rearrange / replace panel such that breaker handles are operated in horizontal plane, or, use as is with facility management acceptance and approval.	Resolved	The As-Built drawings for the AP Tank Farm were released between 1982 and 1986. The NEC requirement (article 240.81) was not incorporated until the 1987 NEC. These breakers provide overcurrent protection and are operated during facility operation. The qualified electrical workers are familiar with the configuration. Therefore, this configuration considered acceptable.

AP TANK FARM

Issue #	**Demand Load Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Load Flow & voltage Drop Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Short Circuit Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Protective Device Coordination Issues**	**Recommendations**	**Status**	**Comment**
8.5.4	Where existing protective device coordination could be improved using existing equipment, recommended setting changes are provided and summarized in the following Table.	Update Breaker Trip Settings.	Field Work Required	1) BKR 101 trip unit was changed from Amptector I-A Model LIG to Digitrip 910 LIG. The new trip unit is set to the maximum value on the LTD and to 8X on the INST. The vendor curve was used to set the breaker trip settings comparable with recommended trip settings shown in the table. 2) BKR 103 and BKR 116 need to be adjusted during the performance of the MCC Breaker PM. PM# WDL-110917 Prepared

Circuit Breaker Trip Settings, Summary

Breaker	Existing Setting				Recommended Setting			
	LTPU	LTD	STPU	INST	LTPU	LTD	STPU	INST
BKR-101	0.9	4	NA	10	1	28	NA	10
BKR-103	1	Fixed	8	NA	1	Fixed	5	NA
BKR-116	Fixed	Fixed	NA	Lo	Fixed	Fixed	NA	4

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.41	General — Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at MCC-002, and MCC-003. At MCC-002 for example, a short circuit at the annulus exhaust fans may have sufficient fault energy to trip the MCC-002 main breaker. A potential solution is to raise the instantaneous trip setting of the main breaker. In this example of MOC002, however, even the highest available setting (6000A) is insufficient to provide complete coordination of Instantaneous tripping. At MCC-003, there is sufficient available short circuit current at the location of the end use loads to trip the incoming feeder breaker (BKR-1 16) supplying all of MCC 003.	NA	NA	NA
8.5.4.2	Circuit Breaker BKR-1 01 (feeder breaker to MCC-001) — Miscoordination of existing settings is present between breakers BKR-1 01 and BKR-1 04, Existing settings may allow the upstream breaker BKR-1 01 to trip for an overload, or low level fault on MCC-002. The recommended settings for BKR-1 01 provide increased selectivity with downstream devices. Reference time current curve TCC: MCC-001 in Appendices E and P.	The recommended settings for BKR-101 provide increased selectivity with downstream devices	NA	Breaker trip unit was changed from Amptector I-A Model LIG to Digitrip 910. The new trip unit is set to the maximum value on the LTD and to 8X on the INST. There is no setting on the new trip unit of the breaker for a setting of 10x. See8.5.4 above
8.5.4.3	Circuit Breakers BKR-1 03, -104, -127— There is overlap of the low level short circuit trip characteristics of these three breakers. It is possible that a low level fault at MCC-002 may trip the main breaker (BKR-1 03) of MCC-001, before the MCC-002 feeder breaker (BKR-1 04) or MCC-002 main breaker (BKR-127) can clear the fault. There are no available adjustments on the existing breakers that Will affect this condition. Reference Time Current Curve MCC-002 in Appendices E and P.	NA	NA	NA

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.4.4	Circuit Breaker BKR-1 16 (feeder breaker to MCC-003) — Selective coordination with downstream devices can be improved by increasing the instantaneous setting of BKR-1 16 (See 6.5.4). Reference time current curves TCC: SA-CMP-001 and TCC: EDS-DP-106 in Appendices E and P.	NA	NA	The Instaneous trip setting for the breaker cannot be increased as specified. The impact of unplanned outages caused by mis-coordination of this breaker is minimal. No further action is required.

Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
NA	NA	NA	NA	NA

7.0 AW TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8183 Rev 1	03/31/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	5	0	1	4
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	2	2	0	0
6	Equipment Evaluation Report	3	0	0	3
7	Arc Flash Evaluation Study	1	1	0	0
	Total	11	3	1	7

AW TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Circuit breakers in panels AW241-EDS-DP-100 and AW241-EDS-DP-201A are mounted in two rows, and oriented in a vertical position. Half of the breakers are arranged such that the UP position of the handle is the "OFF" position of the breaker. This is a violation of NEC article 240-81.	Rearrange / replace panel such that breaker handles are operated in horizontal plane, or, use as is with facility management acceptance and approval.	Resolved	The facility was installed with as built drawing released late 1982, the NEC 240-81 which prohibits horizontal mount of the breaker became effective in the 1987 code, and therefore this is considered to be within the code of record. These breakers are not used for routine operation and can be used by qualified electrical technicians only, therefore this configuration considered satisfactory H-14-030002, Sh.1, Rev.18 H-14-030002, Sh.3, Rev.10 H-14-030002, Sh.5, Rev.1 H-14-030002, Sh.13, Rev.6
8.1.2	Supernatant Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011, AW05A-WT-P-014, and AW06A-WT-P-017 are 30HP. The NEC FLA for 30HP motor is 40A. PTW calculated load flow for the motors (assumed to be operating) is approximately 43A. The motor circuit conductors between the receptacle and the motor are indicated to be #8AWG. The NEC ampacity of a #8 flexible cord or cable is at most 40A per NEC Table 400-5(A) and 48A per NEC Table 400-5(B). The calculated load flow to the 30HP motors exceeds the ampacity of the motor circuit conductors. NEC article 430-22 requires motor circuit conductors to be rated for 125% motor FLA (40 x 1.25 = 50A). The #8 conductors are in violation of the NEC.	Increase size of motor circuit conductors (50A minimum).	Document Change ECN Required	1) Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011 have been disconnected per ECN-724186, R.0 and Drawing H-14-030002, sh.1, Rev.17 2) Pump AW06A-WT-P-017 conductors have been changed by ECN-664744, R.0 to show #6 wire is installed. 3) A walkdown was performed on 10/6/2008 on Pump AW05A-WT-P-014 circuit and verified the cable between MCC compartment down to the MCC terminal strip is #8 (About 4 feet), and the cable between the MCC terminal strip to the field is #6, the SOW cable going to the pump is also # 6 cable. The cabinet is compliant with UL-508A, "Industrial Control Panel" Section 29.6(a), internal wiring sizing. This section use 100% FLA for sizing the wires. The Field wiring from the MCC terminal strip to the load is #6 AWG which is good for 55Amp. The field

AW TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
				installation is NEC compliant. No further action required ECN-664744, R.0. Changed the wire size to show #6AWG wire connected to AW06A-WT-P-017. ECN Required Reference: H-14-030002
8.1.3	Circuit breaker BKR-102 has a 60A trip rating. The feeder originating at BKR-102 is #8 AWG, with an NEC ampacity of 40A. The feeder conductor is not adequately protected by the feeder breaker. This is a violation of NEC 240-3.	Replace feeder with larger conductors (#6 AWG), or replace BKR-102 with one of lower trip rating (40A).	Resolved	Confirmed that a #6 AWG cable is installed. The conductor was replaced by a #6 AWG conductor by ECN-723356, R.0 Reference: See H-14-03002 Sh.1. ECN-723356, R.0
8.1.4	Motor circuits supplied by circuit breakers BKR-104, BKR-105, and BKR-113 are #8 AWG with an NEC ampacity of 40A. The 30HP motors have an NEC FLA of 40A. NEC article 430-22 requires conductors to be rated for 125% FLA (50A). The #8 conductors are not in compliance with NEC article 430-22.	Replace conductors with larger size (#6 minimum).	Resolved	This item is Duplicate of 8.1.2 No action required.
8.1.5	Secondary conductors of transformer XFMR-108 are #4 AWG with NEC ampacity of 70A. These conductors are inadequately protected by the 80A main breaker in panel AW818-EDS-DP-108C. This is a violation of NEC article 240.21(c) (3).	Reduce trip rating of main breaker in panel EDS-DP-108C (70A maximum) or replace transformer XFMR-108 secondary conductors with larger (#3 minimum) conductors.	Resolved	Breaker was changed to 70A breaker by ECN-723497 Rev 0. Reference: H-14-030002, sh.12, Rev.3

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Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.4	The following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus: Bus Voltage Drops > 8.3% (480V Assumed at Utility Transformer Secondary Bus) Component Name: High Phase Voltage Drop None:	NA	NA	No bus voltage drops exceed ANSI C84.1

Issue #	Short circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

AW TANK FARM

<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.4</td><td>Where existing protective device coordination could be improved using existing equipment, recommended setting changes are provided and summarized in the following Table.
<table>
<tr><th colspan="11">Circuit Breaker Trip Settings, Summary</th></tr>
<tr><th></th><th colspan="5">Existing Setting</th><th colspan="5">Recommended Setting</th></tr>
<tr><th>Breaker</th><th>LTPU</th><th>LTD</th><th>STPU</th><th>STD</th><th>INST</th><th>LTPU</th><th>LTD</th><th>STPU</th><th>STD</th><th>INST</th></tr>
<tr><td>BKR-100</td><td>1.0</td><td>20</td><td>4</td><td>0.33</td><td>6</td><td>1</td><td>20</td><td>4</td><td>0.33</td><td>12</td></tr>
</table></td><td>Change the instantaneous to 12 max</td><td>Field Work Required</td><td>Need to set breaker 100 to the recommended settings
WDL-110917
Reference:
H-14-030002, Sh.1, Rev.18</td></tr>
<tr><td>8.5.5.2</td><td>The maximum available instantaneous setting will not provide complete short circuit coordination with close-in, high magnitude faults on the feeders downstream of the following MCC-001 feeder breakers: BKR-102, -103, -104, -105, -106, -107, -108, -109, -111, -112, -113, and -115</td><td>Disable the instantaneous trip, if possible. If the instantaneous cannot be disabled, set at maximum (12X). However, the highest available instantaneous setting is insufficient to provide a trip setting greater than the available short circuit current downstream of the feeder breakers, and selectivity may not be achieved for feeder short circuits near the MCC.</td><td>Field Work Required</td><td>Need to verify the breaker settings are consistent with the recommended settings.
WDL-110917
Reference:
H-14-030001, Sh.1 Rev.18
H-14-030001, Sh.2 Rev.11</td></tr>
<tr><td>8.5.5.3</td><td>Breaker BKR-111 is a feeder breaker in MCC-001 upstream of MCC-002 protecting the approximately 350 foot long feeder. The MCC-002 main breaker has no overcurrent trip functions. The maximum available instantaneous setting of BKR-111 will not provide complete short circuit coordination with MCC-002 feeder circuit breakers for high magnitude short circuits on most feeders downstream of MCC-002</td><td>Accept as is</td><td>NA</td><td>Accept as is</td></tr>
</table>

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.5.4	Panel AW273-EDS-DP-108A Main Breaker – The instantaneous trip on the main breaker in panel AW273-EDS-DP-108A (PTW label DP-108A-Main) miscoordinates with the instantaneous trip of the mini mini-power zone primary main breaker BKR-114, and with the instantaneous trip of the branch breaker in panel DP-108A, for high level short circuits on the conductors supplying panel AW273-EDS-DP-108B in the mini power zone	Accept as is	NA	Accept as is
8.5.5.5	Panel AW273-EDS-DP-108A Main Breaker – The instantaneous trip on the main breaker in panel AW273-EDS-DP-108A (PTW label DP-108A-Main) miscoordinates with the instantaneous trip of the mini mini-power zone primary main breaker BKR-114, and with the instantaneous trip of the branch breaker in panel DP-108A, for high level short circuits on the conductors supplying panel AW273-EDS-DP-108B in the mini power zone	Accept as is	NA	Accept as is

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.1	Equipment evaluation based upon load flow current indicates the following non-passing status:	Verify loads on Panel DP-102A and re-assess main breaker rating. Verify loads on Panel DP-102B and re-assess main breaker rating. Verify loads on Panel DP-201A and re-assess main breaker rating.	Resolved	Connected load without application of demand factors exceeds the over current device settings, but is within the device Ampere Interrupting Capacity (AIC). The over current trip is acceptable to facility operation. No action required. References: H-14-030002, sh.1, Rev.18 H-14-030002, sh.3, Rev.10

Device	Status	Comment
	Fail (Applied at > 100% Current Rating)	
BKR-101	X	673A on 600A rating.
BKR-201	X	25A on 20A rating.
DP-102A-MAIN	X	103A on 70A rating
DP-102B-MAIN	X	31A on 30A rating
DP-201A-MAIN	X	62A on 60A rating

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.2</td><td>Design load current (50A) on MCC-001 feeders supplying 30HP supernatant pumps WT-P-008 and WT-P-014 exceeds the ampacity (40A per NEC 310-16 at 60 degrees C) of the #8 conductors. This result would be typical of the other similar supernatant pump motor (WT-P-001, WT-P-017) circuits if they were in service (in this study). NEC FLA for 30 HP motors is 40A. NEC 430-22 requires motor circuit conductors to be rated for 125% FLA = 40 x 1.25 = 50A. Equipment evaluation based upon load flow current indicates the following non-passing status.
<table>
<tr><th>Device</th><th>Status</th><th>Comment</th></tr>
<tr><td></td><td>Fail
(Applied at > 100% Current Rating)</td><td>LF = Load Flow</td></tr>
<tr><td>CBL-DP-102B</td><td>X</td><td>33A on 30A feeder.</td></tr>
<tr><td>CBL-DP-201A</td><td>X</td><td>62A on 55A feeder.</td></tr>
<tr><td>WR19</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR20</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR24</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR66</td><td>X</td><td>47A on 40A feeder</td></tr>
</table></td><td>Compliance with NEC 430-22 requires replacement of the conductors with larger (#6 minimum) conductors. See</td><td>Resolved</td><td>This is a duplicate issues described in items 8.1.2 and 8.1.5. By resolving 8.1.2 and 8.1.5 it will resolve issues identified by this item.
1) Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011 have been disconnected per ECN-724186, R.0 and Drawing H-14-030002, sh.1, Rev.17
2) Pump AW06A-WT-P-017 conductors have been changed by ECN-664744, R.0 to show #6 is installed.
3) A walkdown was performed on 10/6/2008 on Pump AW05A-WT-P-014 circuit verified the cable between MCC compartment down the MCC terminal strip is #8 (About 4 feet), and the cable between the MCC terminal strip to the field is #6, the SOW cable going to the pump is also # 6 cable.</td></tr>
<tr><td>8.6.3</td><td>Drawing H-14-030002 Sheet 1 shows the fuse size of fuses in disconnect AW241-EDS-DS-111 as 15A. The field walk down found the fuse sizes to be 1-20A and 1-30A contrary to the drawing. The conductor size was found to be #12 AWG. The 20A fuses were modeled in the report due to the installed installation. There is not enough data available on the load side components to determine the use of 15A vs. 20A fuses. The 30A fuse does not provide the required over current protection for #12 AWG conductors as required by the NEC</td><td>Replace the existing 20A and 30A fuses with 15A fuses in the field to agree with the design and corresponding floodlight fuse installations off of the same circuit</td><td>Resolved</td><td>An electrician verified that 15A fuses are installed on 09/26/2008.
No further action required
Reference:
H-14-030002, Sh.1, Rev.18</td></tr>
</table>

AW TANK FARM

Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
8.7.6	The Arc Flash Evaluation indicates all evaluated fault locations in the 480V-208V systems produce arc flash incident energy values below 1.2 cal/cm^2 (PPE Hazard Class 0) except for the following:	NA	NA	NA

Arc Flash Incident Energy > 1.2 cal/cm^2			
Bus Fault Location	Incident Energy (cal/cm^1.2)	PPE Class	Comment
BUS-BKR-100LD	40.4	Dangerous!!!	2 second max. arc exposure time assumed
BUS-ENCL-100	40.2	Dangerous!!!	2 second max. arc exposure time assumed
BUS-BKR-101	39.8	4	2 second max. arc exposure time assumed
EDS-MCC-001	39.8	4	2 second max. arc exposure time assumed
RCPT-WT-P-017	7.01	2	
BUS-WT-P-017	6.69	2	2 second max. arc exposure time assumed
RCPT-WT-P-001	6.64	2	2 second max. arc exposure time assumed
XFMR-111-SEC	6.61	2	2 second max. arc exposure time assumed
BUS-WT-P-001	6.31	2	2 second max. arc exposure time assumed
BUS-POLE-NP1A	4.43	2	2 second max. arc exposure time assumed
C5662P-PRI	4.41	2	2 second max. arc exposure time assumed
RCPT-WT-P-014	4.27	2	2 second max. arc exposure time assumed
BUS-WT-P-014	4.15	2	2 second max. arc exposure time assumed

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Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
	BUS-DP-111 | 3.26 | 1 | Line Side Fault Location | | | DP-111-MAIN | 6.68 | 2 | Note: Assumed maximum arc exposure time is 2 seconds.			
8.7.7	The high arc flash incident energies associated with the first four bus locations in the table above are due to the high long time delay and instantaneous settings of breaker BKR-100. The original trip unit possessed a short time trip function that would allow selective coordination for overloads and low value short circuits as well as reduce trip times and available arc flash energies for high short circuit currents. A replacement trip unit recently installed does not include a short time trip function	Replace trip unit with one possessing short time trip functions	Field Work Required	The currently installed breaker 100, has a trip unit that includes a short timer setting. This setting being set under item 8.5.4. Breaker 101 needs to be replaced with a breaker with a trip unit possessing a short time trip function. Work Package TFC-WO-08-2310 is prepared. An ECN is required. Reference: H-14-030002, Sh.1, Rev.18

8.0 AY TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24468 Rev 0	04/21/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	6	2	0	4
2	Demand Load Study	1	0	0	1
3	Load Flow and Voltage drop Study	1	0	0	1
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	1	1	0	0
6	Equipment Evaluation Report	2	1	0	1
7	Arc Flash Evaluation Study	0	0	0	0
	Total	11	4	0	7

AY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Conductors (PTW CBL-DS-101) between disconnect switch F8X696 and disconnect switch DS-I01 are assumed to be #8 AWG to match adjacent conductor sizes. Ampacity of# 8 AWG at 60 deg C is 40A, however, conductor protection is provided by 200A fuses in F8X696.	Verify conductor and fuse size. Re-conductor or change fuse size as required.	Resolved	This cabinet was updated per ECN-725269-R0. This ECN was released in 2/2008 and worked completed in 6/2008. No issues remain. Reference: ECN-725269-R0 H-14-030006, sh.1, Rev.14
8.1.2	Conductor (PTW CBL-DP-105) between transformerXFMR-105 and panel DP-105 is #4 AWG with 60 deg C ampacity of 70A and 75 deg C ampacity of 85A. Downstream main breaker of DP-105 is 100A. The 100A breaker does not provide adequate overcurrent protection for the #4 transformer secondary tap conductors per NEC 240.21 (C).	Decrease main breaker rating to 90A if rated for 75 deg C, 70A if rated for 60 deg C.	Field Work Required	The secondary conductor size is #4 which is good for 70A at 60 deg according to NEC table 310-16. AY241-EDS-DP-105 main breaker needs to be replaced with 70A max to comply with NEC 240-21 (C) There is no immediate hazard since the total AY241-EDS-DP-105 load of 14660W @240VAC=61A which does not exceed the cable rating of 70A but the main breaker need to be replaced to comply with the NEC code. Work package TFC-WO-08-2312 has been assigned. ECN Required. Reference: H-14-030006, sh.1, R. 14 H-14-030006, sh.7, R. 3
8.1.3	Wire run WR362 is a #8 AWG tap conductor originating at TBX-W314-07 and terminating at disconnect switch DS-202 with a 60 deg C ampacity of 40A and a 75 deg C ampacity of50A. Fuses in DS-202 are 45A and do not provide adequate overcurrent protection for the 60 deg C ampacity of the #8 conductors. (Ref. H-2-64347 Sh. 3 Rev 4, H-2-64348	Verify 60A disconnect switch DS-202 is rated for 75 deg C wiring. If not, increase wire size or decrease fuse rating.	Resolved	Contacted Allen-Bradley Manufacturer on 10/8/2008, been informed that the fuse disconnect switch rated for 14 to 4 AWG IEC 947 60 or 75 deg copper wire. In this case using 75deg of NEC table 310-16 the cable is good for 50A. No further action required

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	Sh. 1 Rev 9)			Reference: H-14-030006, Sh.1, Rev.14, H-2-64347 Sh 3, Rev.5 H-2-64348 Sh 1, Rev.10
8.1.4	AY801A-EDS-MCC-001 feeder breaker BKR-152 trip rating is 30A. Downstream conductors (PTW WR319a, WR319b) are #12 AWG with an NEC maximum overcurrent protection limit of 20A. The 30A feeder breaker does not provide adequate overcurrent protection for the #12 conductors. (Ref. H-2-64341 Sh. 1 Rev 8, ECN W314-50-028)	Change BKR-152 to have a 20A trip rating.	Field Work Required	Work package TFC-WO-08-2313 has been submitted to change the breaker. ECN-726043-R0 is being developed. Reference: H-14-030006, Sh.1, Rev.14
8.1.5	AY801A-EDS-MCC-001 feeder breaker BKR-152 trip rating is 30A. Downstream floodlight transformers XFMR-102 and XFMR-103 are 5kVA with primary full load amps (FLAs) of 10.4A. The 30A trip rating ofBKR-152 does not provide adequate transformer primary overcurrent protection per NEC 450.3 (B).	Change BKR-152 to have a 20A trip rating.	Resolved	This is a duplicate of 8.1.4 above. Reference: H-14-030006, Sh.1, Rev.14
8.1.6	Wire run WR363 is a #6 AWG tap conductor originating at TBX-W314-07 and terminating at disconnect switch DS-203 with a 60 deg C ampacity of 55A and a 75 deg C ampacity of 65A. Fuses in DS-203 are 60A and do not provide adequate overcurrent protection for the 60 deg C ampacity of the #6 tap conductors. (Ref. H-2-64347 Sh. 3 Rev 4, H-2-64348 Sh. I Rev 9)	Verify 60A disconnect switch DS-203 is rated for 75 deg C wiring. If not, increase wire size or decrease fuse rating.	Resolved	This is a duplicate of 8.1.3. Contacted Allen-Bradley Manufacturer on 10/8/2008, been informed that the fuse disconnect switch rated for 14 to 4 AWG IEC 947 60 or 75 deg copper wire. In this case using 75deg of NEC table 310-16 the cable is good for 65A No further action required Reference: H-14-030006, Sh.1, Rev.14 H-2-64347 Sh 3, Rev.5 H-2-64348 Sh 1 , Rev.10

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Issue #	Demand Load Issues	Recommendations	Status	Comment
8.2.2	The PTW demand load study indicates a calculated connected load of approximately 315 kVA, a demand load of approximately C6528P/C6529P/C6530P based upon the configuration and operating conditions of the PTW model.		Resolved	Unnecessary loads were physically disconnected to resolve the issue.

Issue #	Load Flow Study Issues	Recommendations	Status	Comment
8.3.4	The voltage drop calculation indicates the following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus:	NA	Resolved	Actions were taken to reduce the load, Reference: TE-06-020 R.2, ECN-724335 ECN-723341

Bus Voltage Drops > 8.3%	
(480 Assumed at Utility Transformer Secondary Bus)	
Component Name	High Phase Voltage Drop (%)
BUS-HVAC	9.04
BUS-DP-105	8.77
BUS-DP-103	8.55
BUS-DP-102	8.53

Issue #	Short circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

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<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.4.4</td><td>Although they meet the NEC requirements for overcurrent protection, comparison of the cable thermal damage curve with the time-current characteristics of the upstream protective device indicates the following cables may not be adequately protected from damage due to overloads or short circuits. Cable damage temperature is assumed to be 150 deg. C with an initial operating temperature of75 deg. C. Field verification of cable insulation may be warranted.
<table>
<tr><th>Cable Name</th><th>Reference TCC</th><th>Wire Size</th><th>Protective Device (Upstream)</th><th>Comment</th><th></th><th></th></tr>
<tr><td>CBL-BKR-152LD</td><td>FL-POLE1</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.4</td><td>Duplicate</td></tr>
<tr><td>WR319a</td><td>FL-POLE1</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.4</td><td>Duplicate</td></tr>
<tr><td>WR319b</td><td>FL-POLE2</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.6</td><td>Duplicate</td></tr>
<tr><td>WR363</td><td>RCPT-203</td><td>6</td><td>BKR-153 C-H, HFD,100A</td><td>see 8.1.6</td><td></td><td>Duplicate</td></tr>
<tr><td>WR323A</td><td>DP-102</td><td>40</td><td>BKR-155 C-H, HFD,250A</td><td>Transformer secondary tap, downstream protection.</td><td>Acceptable</td><td>Resolved</td></tr>
<tr><td>WR322</td><td>RCPT-121</td><td>10</td><td>BKR-157 C-H, HFD,240A</td><td></td><td>New fuse installed 15A</td><td>Resolved</td></tr>
<tr><td>WR361</td><td>RCPT-201</td><td>10</td><td>BKR-160 C-H, HFD,70A</td><td>Tap conductor, downstream protection.</td><td>New 25 Amp Fuse</td><td>Resolved</td></tr>
<tr><td>WR362</td><td>RCPT-202</td><td>8</td><td>BKR-160 C-H, HFD,70A</td><td>Tap conductor, downstream protection.</td><td>New 45 Amp Fuse</td><td>Resolved</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc. purpose and guidelines for basic over current protection philosophy for insulated power cables
IEEE 242-2001 chapter 9 Cable ProtectionH-14-030006, Sh.1.</td></tr>
</table>

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Issue #	Protective Device Coordination Issues							Recommendations	Status	Comment
	WR170	DP-110	4	BKR-163 C-H, HJD, 200A	Tap conductor, downstream protection.	Replace cable with 3/0 or reduce the breaker to 20A	Field Work			
	CBL-CP-202	EF-001	10	BKR-110 C-H, FD, 50A	Motor circuit	Replace breaker to 30A	Field Work			
	CBL-EF-001	EF-001	10	BKR-110 C-H, FD, 50A	Motor circuit		Duplicate			
	CBL-ENCL-201	HTR-003	4	BKR-163 C-H, HJD, 200A	Tap conductor, downstream protection.		Duplicate			
	CBL-ENCL-301	HTR-004	4	BKR-164 C-H, HJD, 200A	Tap conductor, downstream protection.	Replace BKR-164 to 70A trip	Field Work			
	CBL-ENCL-302	EF-002	10	BKR-164 C-H, HJD, 200A	Motor feeder tap.	Duplicate	Duplicate			
	CBL-EF-002	EF-002	10	BKR-113 C-H, FD, 50A	Motor circuit	Change breaker BKR-113 to 30A trip	Field Work			
	WR180	DP-111	4	BKR-164 C-H, HJD, 200A	Tap conductor, downstream protection.	Duplicate	Duplicate			
	CBL-DS-101	DP-105	8	FU-F8X696 BUSS, RES, 200A	See 8.1.1	Duplicate	Duplicate			

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.1</td><td>Protective equipment evaluation based upon load flow current indicates the following protective equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="3">Continuous Current Ratings Exceeded</th></tr>
<tr><th>Component Name</th><th>Rating Exceeded</th><th>Comment</th></tr>
<tr><td>C8X550</td><td>17A on 12A rating</td><td>315 kVA on 225 kVA Transformer Rating</td></tr>
<tr><td>FU-DS-105</td><td>16.6A on 15A rating</td><td>Pole 1 Flood lights</td></tr>
<tr><td>FU-DS-106</td><td>16.8A on 15A rating</td><td>Pole 2 Flood lights</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>This is a duplicate of item 8.1.4
System is lightly loaded according to the meter data (68%) The protective devices will trip (Open) to Protect downstream equipment.
No further action required.</td></tr>
<tr><td>8.6.2</td><td>Non-Protective equipment evaluation based upon load flow current indicates the following equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="3">Non Protective Device Equipment Evaluation, Load Flow, Failed Equipment</th></tr>
<tr><th>Device</th><th>Criteria Failure</th><th>Comment</th></tr>
<tr><td>CBL-DP-105</td><td>85A > 70A rating</td><td>Review Panel DP-105 loads</td></tr>
<tr><td>C6528-9-30P</td><td>17A > 9.4A rating</td><td>Rating of 225 kVA service transformer exceeded</td></tr>
<tr><td>XFMR-105</td><td>36A > 31.3 rating</td><td>15kVA rating exceeded. Review Panel DP-105 loads</td></tr>
</table></td><td>Verify loads assigned to panel DP-105 as recorded on H-14-030003 Sh. 7 Rev 3. Note that panel schedule loads are given in Watts with no stated power factor. In general, this calculation assumed a power factor of 90%.</td><td>Resolved</td><td>Loads were removed using ECN 722089-R0
Reference
H-14-030006 Sh3</td></tr>
</table>

9.0 AZ 701/702 FACILITIES

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24466 Rev 0	12/9/2005	Version 5.0.3.0 Build 1	2005	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

AZ 701/702 FACILITIES

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.2	There were some voltage drop warnings issued by the PTW Load Flow and Voltage Drop Analysis. The Equipment Evaluation Reports did report some failures based upon voltage drop criteria problems and the 80 percent rule for breaker/cable loading, for more specific information, see Section 9.0 and Appendices D & H.	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

10.0 AZ TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24465 Rev 0	4/26/2005	5.0.2.8 Build 2	2005	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

AZ TANK FARM

Issue #	Load Flow & voltage Drop Issues	Recommendations	Status	Comment
8.2	There were no 1 PH or 3 PH voltage drop warnings issued by the PTW Load Flow and Voltage Drop Analysis. The Equipment Evaluation Reports did report some failures based upon voltage drop criteria problems and the 80 percent rule for breaker/cable loading, for more specific information, see Section 9.1 and Appendices D & H.	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	Equipment Evaluation was run for both 1 PH and 3 PH. The 1 PH and 3 PH reports show "Base Project" device/equipment failures. The term "Fail" in the Equipment Evaluation Report does not mean the equipment has or is going to fail, but that the equipment failed to pass the NEC/IEEE evaluation guidelines. For more specific information, see Section 9.1 and Appendix H.	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

11.0 C-109 RETRIEVAL PROJECT

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-32223 Rev 0	04/19/2007	Version 6.0.2.8	2005	ARES Corporation

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

C-109 RETRIEVAL PROJECT

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Load Flow & voltage Drop Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

12.0 SY TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8185 Rev 0	6/24/2004	3.8.1.0 Build 2 4.0.2.6 Build 1	1999	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	17	8	0	9
2	Demand Load Study	3	0	0	3
3	Load Flow and Voltage drop Study	1	0	0	1
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	8	1	0	7
6	Equipment Evaluation Report	4	1	0	3
7	Arc Flash Evaluation Study	0	0	0	0
	Total	33	10	0	23

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Breaker F8X703 - The existing Long Time Pick Up setting (1.0), with a 2000A sensor provides a trip setting of 2000A. This setting does not provide adequate overcurrent protection for the incoming conductors. The incoming conductors are (2) parallel 750 kcmil, with a 75 deg. C ampacity of 950A. NEC 230-90 requires the conductors to be protected from overcurrent with a rating not greater than the conductor ampacity.	As a minimum, lower the LTPU setting to the minimum available value of 0.5. This setting is still 50A above the maximum allowed by the NEC, but is the lowest available setting of the existing equipment. However, this configuration is not in compliance with present code. Options include: replace conductors; replace breaker trip unit with one with lower settings; replace breaker current sensors (CTs); or Facility design authority may seek determination of acceptability.	Resolved	The lower LTPU setting for Breaker F8X703 has been set to the 0.5 value. Reference: WT-O6166
8.1.2	Breaker F8X702 - The existing available settings do not provide overcurrent protection for the upstream incoming conductors as required by NEC 230-90, The 2000A sensor and the 0.5 LTPU setting (1000A) is not adequate to protect the parallel 750 kcmil conductors to their 75 deg C ampacity of 950A.	Existing configuration is not in compliance with present code. Replace conductors, replace breaker trip unit, replace breaker current sensors (CTs), or Facility design authority may seek determination of acceptability.	Field Work Required	Replace the tip unit Current Transformer for breakers F8X702 & 703, and adjust trip settings to a maximum of 625Amp. Then close tie-in breaker 4B. Work Package TFC-WO-08-2316 has been initiated. ECN Required Reference: H-2-46424, Sh.1, R.11
8.1.3	Fuse (20A) in starter for EX-C-1 is much larger than required by the load, and is a violation of NEC 430-52	Replace fuse with 7.5A (max) time delay (preferred), or 9A (max) non-time delay fuse.	Field Work Required	Replace the fuse with one that has a rating not exceeding the value given in the NEC Table 430.52. The full load amp (FLA) for 1 ½ motor, 3-Phase, 480 VAC is 3.0A (NEC Table430-250. The percentage of full load current is 300% (3.0A X 300%=9.0A) for non-time delay fuse and 175% (3.0A X 175%= 5.25A, next fuse size up to 7.5A) for a time-delay fuse. Work Package Required ECN Required Reference: H-2-46424, Sh.2, Rev.9 NEC Table 430.52

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.4.	Secondary conductors on transformer SY241-EDS-XFMR-102 do not posses overcurrent protection required by NEC 240-21 (c), The sum of the downstream overcurrent devices (100A fuses in SY241-EDS-DS-130 and 70A fuses in SY-EDS-DS-131) exceeds the ampacity (150A) of the secondary conductors (wire run HMS-15)	Install larger secondary conductors, or decrease the sum of the downstream fuse ratings to 150A or less. (See paragraph 8.1.5 below)	Field Work Required	Breaker SY272-EDS-BKR-117 has been opened to de-energize the Data Acquisition & Control System (DACS) Trailer. An ECN has been prepared to lift the leads at load side of breaker SY272-EDS-BKR-117 Work package Number TFC-WO-08-2316 has been submitted to perform this work Reference: H-14-030031, sh.3, Rev.9 H-14-030031, Sh.27, Rev.1
8.1.5	Fuses in disconnect switch SY241-EDS-DS-131 supplying SY461-VT-HVAC-3 do not provide required overcurrent protection of downstream conductors (wire run HMS-17). Installed fuses are 70A, cable ampacity is 55A @ 60 deg C	Reduce the rating of the fuses to 55A or less	Resolved	This item is addressed by item 8.1.4 above Reference: H-14-030031, sh.3, Rev.9
8.1.6	Cable HMS-107 is not adequately protected from overcurrent by the 200A rating of the upstream breaker BKR-129 in MCC-003. Ampacity of the *1/0* conductors is 150A @ 75 deg. C	Replace BKR-129 with one of lower current (trip) rating, 150A or less	Field Work Required	Reduced the load by de-energizing the SHIMs cabinets and determined that the connect load does not exceed the ampacity of the HMS-1207 conductor. Work package TFC-WO-08-2317 has been submitted ECN Required Reference: H-14-030031, sh.4, Rev.2 H-14-030031, sh.20, Rev.4 H-14-030031, sh.21, Rev.2
8.1.7	Cable HMS-19 on secondary of transformer EDS-XFMR-105 does not have overcurrent protection required by NEC 240-21 (c). Cable ampacity is 310A @ 75 deg. C. The sum of the overcurrent ratings of the devices downstream (EDS-DS-142, -149, & -150) is 480A	Increase size of HMS-19 conductors, or decrease the sum of the ratings of the downstream overcurrent devices. (See paragraph 8.1.8)	Resolved	This issue is addressed by 8.16. Above.

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.8	Cable HMS-19C supplying disconnect switch EDS~DS-150 is not adequately protected from overcurrent as required by NEC 240-21 (b) (1) (a). The cable ampacity is 70A, and terminates at the disconnect switch containing 80A fuses. The 80A fuses do not provide the required overcurrent protection.	Replace the fuses with ones of lower rating, 70A or less	Resolved	The fuse was changed from 80A to 40A to comply with the NEC code. No further action required Reference: ECN-722997, R.0.. H-14-030031, sh.4, Rev.2 H-14-030031, sh.4, R.2
8.1.9	Primary conductors on transformer SY276-EDS-XFMR-106 supplying panel EDS-DP-116 are not adequately protected from overcurrent by upstream devices as required by NEC 240-3. Conductor ampacity is 40A. Upstream disconnect switch EDS-DS-152 contains 60A fuses.	Replace the 60A fuses with 40A fuses	Resolved	This issue is addressed by 8.1.4 above. Reference: H-14-030031, sh.5, Rev.6
8.1.10	Transformer SY241-EDS-XFMR-107 does not have overcurrent protection as required by NEC 450-3(b). Secondary protection is required unless primary protection is provided at 125% transformer FLA or less. Primary protection is greater than 125% FLA, therefore 125% maximum secondary overcurrent protection is required. Transformer FLA is 31A. 125% FLA is 39A. The only existing secondary overcurrent device is the 80A main breaker in panel SY241-EDS-DP-118. Existing secondary overcurrent protection exceeds the maximum allowed.	Install lower rated (40A or less) main breaker in panel EDS-DP-118. (See 8.1.11 below)	Field Work Required	The main breaker in DP-118 should be replaced with 40A breaker to comply with the NEC code 450-3(b). ECN-726117-R0 is being developed Work Package TRC-WO-08-2318 has been submitted to replace the breaker. Reference: H-14-030031, sh.5

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.11	Breaker F8X703 – The existing Long Time Pick Up setting (1.0) with a 2000 A sensor, provides a trip setting of 2000A. This setting does not provide adequate overcurrent protection for the incoming conductors. The incoming conductors are (2) parallel 750 kcmil, with a 75 deg C ampacity of 950A. NEC 230.90 requires the conductors to be protected from overcurrent with a rating not greater than the conductor ampacity.	As a minimum lower the LTPU setting to the minimum available value of 0.5. This setting is still 50A above the maximum allowed by the NEC, but is the lowest available setting of the existing equipment. However this configuration is not in compliance with present code. Options include: replace breaker trip unit with one with lower settings; replace breaker current sensors (CTs); or Facility design authority may seek determination of acceptability.	Resolved	This issue is addressed by 8.1.10.
8.1.12	Secondary conductors on transformer EDS-XFMR-107 supplying panel EDS-DP-118 are not provided adequate overcurrent protection required by NEC 240-21 (c). Ampacity of secondary conductors is 70A. Downstream overcurrent device is 80A main breaker in panel EDS-DP-118. The 80A main breaker does not provide the required (70A or less) overcurrent protection	Install lower rated (70A or less) main breaker in panel EDS-DP-118.	Resolved	This issue is addressed by 8.1.10. Install a 40A main breaker in panel SY241-EDS-DP-118.
8.1.1.3	Cable HMS-24 is not adequately protected from overcurrent by upstream devices as required by NEC 240-3. Cable ampacity is 40A. Upstream overcurrent device(s) are 50A fuses in disconnect switch EDS-DS-146	Replace 50A fuses with 40A (or less) fuses	Resolved	This issue is addressed by 8.1.6. This circuit feeds SHIMS Cabinet SY103-SHM-PNL-005. This equipment have been de-energized. Reference: H-14-030031, sh.4, Rev.2

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.14	Primary conductors on 50kVA transformer 242-S- T-1 are not adequately protected against overcurrent by upstream breaker in MCC-E-001 cubicle 01, based upon the assumption of paragraph 6.4 above, and NEC 240-3. The ampacity of the AWG #1 cable is 110A @ 60 deg. C. Upstream circuit breaker is a 150A frame, with 125A trip rating. While the 150 frame circuit breaker may allow use of the #1 cable at its 75 deg. C ampacity (130A), it is assumed by this study that the 50 kVA transformer (60 FLA) dictates use of the 60 deg. C conductor rating	Verify transformer primary connections are rated for use with 75 deg. C wire, or replace the 125A trip circuit breaker with a breaker rated at 110A or less	Field Work Required	Verify transformer primary connection lugs are rated for use with 75 deg. C wire, or replace the 125A trip circuit breaker with a breaker rated at 110A or less ECN Required Work Package Required Reference: H-2-46424, Sh.4, Rev.14.
8.1.15	Primary conductors on 50kVA single phase transformer EDS-XFMR-100 are not adequately protected against overcurrent by upstream breaker BKR-104 in EDS-MCC-001 cubicle B4, as required by NEC 240-3. The ampacity of the AWG #2 cable is 95A @ 60 deg. C. Upstream circuit breaker is a 150A frame, with 125A trip rating.	Replace the 125A trip circuit breaker with a breaker rated at 100A or les	Field Work Required	The cable between XFMR-100 and BKR-104 is size #2 which is good according table 310-16 to 95A @ 60 deg. The upstream breaker is 125AT. The cable is not protected. There is no immediate hazard since the SHIMS panel SY102-SHM-PNL-005 is OFF. Removal the SHIMS panel load it will bring the total connected load to less the maximum current for the cable. ECN Required) Work Package: TFC_WO-08-2319 has been submitted to replace the breaker. Reference: H-14-030031, Sh.1, Rev.13

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.16	Calculated Connected Load, and Demand Load (6.5 kVA) on transformer EDS-XFMR·101 supplying panel EDS-DP-105 exceeds the 5 kVA rating of the transformer. However, no conductors are overloaded	Verify circuit loads given in panel schedule. Identify any operational constraints or interlocks that will allow consideration of non-coincidental loads. Assess need for larger transformer. Recognize that upstream primary transformer protection (10A fuse in disconnect DS-125) provides overcurrent protection at less than 100% of transformer's rated full/load current	Resolved	The drawing was updated to the current field condition under ECN-726036-R0. This resolves the issue no further action required. Reference: H-14-030031 sh 12
8.1.17	Conductors (#4 AWG) supplying 50HP motor K1-5-3 from MCC-E-001 cubicle C5 have an ampacity of 70A. NEC 430-22 requires motor conductors with ampacity of 125% motor FLA. 50HP motor FLA(65Ax1.25=81A is 81A. Conductors are inadequately sized for the load	Increase size of motor branch circuit conductors	Field Work Required	K1 is the primary exhaust fan for 242-S. Work Package TFC-W-08-0456 has been submitted to determine and correct the K-1 fan motor pigtail wire size and type. Reference: H-14-46424, Sh.3, R.11,

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Issue #	Demand Load Issues	Recommendations	Status	Comment
8.2.1	The demand load study for transformer C6647P indicates a calculated demand load of approximately 1210 kVA, based upon the PTW model Actual electric utility meter data for the last 2 years (Ref. Appendix U) indicates: an average consumption of 87 kW; a (monthly average) demand of 269 kW; and a maximum demand of 569 kW. Assuming a 90% power factor, these equate to 97 kVA; 299 kVA; and 632 kVA respectively. The metered (averaged) demand load is approximately 25% of the PTW calculated demand load.	NA	Resolved	This issue is resolved by issue number:8.1.2
8.2.2	The demand load study for transformer C6648P indicates a calculated demand load of approximately 340 kVA, based upon the PTW model. Actual electric utility meter data for the last 2 years (Ref. Appendix U) indicates: an average consumption of 40 kW; a (monthly average) demand of 70 kW; and a maximum demand of 119 kW. Assuming a 90% power factor, these equate to 44 kVA; 78 kVA; and 132 kVA respectively. The metered (Averaged) demand load is approximately 23% of the PTW calculated demand load.	NA	Resolved	This issue is resolved by issue number:8.1.2
8.2.3	Actual total metered (averaged) demand load (299 + 78 =377 kVA) for the tank farm is approximately 24% of the total demand load (1210 + 340 =1550 kVA) calculated from the PTW mode/(s) in this study. Note that the PTW calculated demand load includes the 498 kW Flush Tank Heater HTR-302C-2.	NA	Resolved	This issue is resolved by issue number:8.1.2

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<table>
<tr><th>Issue #</th><th>Load Flow & Voltage Drop Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.3.1</td><td>PTW load flow and voltage drop output reports (for Case 1) are located in Appendices C, K, and N, Appendix C and K contain output reports for PTW Version 3.8 and 4.0 balanced load flow and voltage drop study. Appendix N contains output report for the Version 4.0 unbalanced study.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.2</td><td>Guidelines (NEC 21 0-19(a) FPN No.4 and 215-2(d) FPN No.2) for allowable load flow voltage drop are 3% in a feeder, and 5% total at furthest downstream bus (equipment location). These voltage drops do not include voltage drops due to utility system and service transformer impedances.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.3</td><td>For this study, the voltage drop at the secondary of the service transformers will be subtracted from the associated total bus voltage drops to determine acceptance of the voltage drops of the distribution system downstream of the service transformers. PTW calculated voltage drops for the service transformers are approximately 2.2% for TXEE-002 serving SWG-E-001 Bus #1 with a secondary bus voltage drop of approximately 1.1 %; and 5.0% for TX-E-001 serving SWG-E-001 Bus #2 with a secondary bus voltage drop of 3.9%.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.3.1</td><td>Load flow voltage drop studies performed by PTW 3.8.1.0 and 4.0, (ignoring the voltage drop(s) up stream of the secondary of the service transformer) indicate the following violations of the above voltage drop guidelines:
<table>
<tr><th colspan="4">Load Flow Voltage Drop Excursions > 5% for Bus, 3% for Branch</th></tr>
<tr><th>PTW Bus Name</th><th>LFVD (%) Bus</th><th>LFVD (%) System Net (Neglect 13.8kV System)</th><th>Comments</th></tr>
<tr><td>XFMR-106-SEC</td><td>6.03</td><td>5.43</td><td rowspan="7">Load flow associated with loads assigned to EDS-DP-116</td></tr>
<tr><td>BUS-ATS-101</td><td>6.18</td><td>5.58</td></tr>
<tr><td>BUS-DS-153</td><td>6.26</td><td>5.66</td></tr>
<tr><td>BUS-EDS-DP-116</td><td>6.3</td><td>5.7</td></tr>
<tr><td>BUS-UPS-100</td><td>6.45</td><td>5.85</td></tr>
<tr><td>BUS-DP-115</td><td>6.49</td><td>5.89</td></tr>
<tr><td>BUS-DS-155</td><td>6.51</td><td>5.91</td></tr>
</table></td><td></td><td>Resolved</td><td>As noted in issue 8.3.4, the measured loads for this facility are between 23 and 25% of the connected loads There are no changes planned to either the facility or its operation that will increase the electrical load.
No Action Required.</td></tr>
</table>

SY TANK FARM

Issue #	Load Flow & Voltage Drop Issues				Recommendations	Status	Comment
	BUS-HVAC-102	6.41	5.81				
	BUS-DP-119	6.89	6.29				
	BUS-TRLR-PNL	10.32	6.43	Load flows associated with assumed load on Change Trailer.			
	CHNG-TRLR-SEC	10.09	6.2				
	BUS-DP-112	11.8 (A Ph)	Approx 10	Load flows associated with EDS-DP-112.			
	BUS-DS-141	11.5 (A Ph)	Approx 10				
	BUS-DS-140	9.6 (A Ph)	Approx 8				
	BUS-DS-137	9.6 (A Ph)	Approx 8	241-SHM-PNL-005 Feeder			
	BUS-241PNL-005	10.9 (A Ph)	Approx 9				
	BUS-DS-138	9.6	Approx 8	01A-SHM-PNL-005 Feeder			
	BUS-01APNL-005	10.3 (A Ph)	Approx 9				
	BUS-DS-139	9.6 (A Ph)	Approx 8	WST-ENCL-103 Feeder			
	BUS-ENCL-103	9.7 (A Ph)	Approx 8				
	PTW Branch Name	LFVD (%) Branch					
	EDS-XFMR-106	4.23					
	XFMR-CHNG-TRLR	3.79		Load flows associated with assumed load on Change Trailer			
	CBL-DP101CKT10	7.0 (A Ph)					
	CBL-DP1 01 CKT5	5.5 (A Ph)					
	CBL-DP101CKT9	4.5 (A Ph)					
	HMS-20	3.8 (A & B Ph)					
	HMS-6	3.6 (A & C Ph)					
	WR-1	3.2 (A & C Ph)					
	WR-2	3.6 (A & C Ph)					

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Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.3	Four of the above noted load flow voltage drop excursions are associated with the loads assumed for the change trailer served by Welding Outlet 1. With no other load information available, the PTW model assumes the 25 kVA transformer supplying the change trailer is fully loaded, resulting in load currents that may be greater than actual		NA	
8.3.4	Note that voltage drop is a function of load flow current, and that metered total (demand) load is approximately 23% and 25% of calculated demand load (based upon loading assumptions of this study) for SWG-E-001 Bus #1 and Bus #2 respectively. Based upon the metered demand load, load flow voltage drops will be significantly less than those calculated by this study model.		NA	

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
8.4.1	Short circuit study output reports are located in Appendices D, L, and O.	NA	NA	
8.4.2	Calculated available short circuit currents at SWG-E-001 Bus #1 were found to be approximately 11 kA for 3phase, and single-line-to-ground. Short circuit currents were reduced to below 9kA at downstream bus EDSMCC-003.	NA	NA	
8.4.3	Calculated available short circuit currents at SWG·E-001 Bus #2 were found to be approximately 12 kA for 3phase, and single-line-to-ground. Short circuit currents were reduced to below 10 kA at downstream bussesMCC·E-001, EDS-MCC-001, and Power Panelboard D.	NA	NA	

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.1	Time Current Curves for protective devices are located in Appendix E (from PTW 3.8.1.0) and Appendix P (from PTW 4.0).	NA	NA	
8.5.2	Existing and Recommended protective device settings are provided in Appendix F (PTW 3.8.1.0) and Q (PTW 4.0).	NA	NA	
8.5.3	Most of the circuit breakers in the 241SY Farm associated with this study have fixed trip settings. Some of the Larger thermal-magnetic breakers with fixed long-time trips may have adjustable instantaneous settings.	NA	NA	
8.5.4	Where existing protective device coordination could be improved using existing equipment, recommended setting Changes are provided and summarized in the following Table.	NA	NA	
8.5.5	Specific coordination issues are discussed below:	NA	NA	
8.5.5.1	General - Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at EDS-MCC-003-A / EDS-MCC-003-B and main breaker BKR-113; DP-108; EDS-MCC-001 and main breaker BKR- 112; EDS-MCC-002 and upstream manual transfer switch MTS-100; for very high level short circuits close to MCC-E-001: and DP-116.	NA	NA	
8.5.5.2	Breaker F8X703 - The existing ground fault delay settings do not selectively coordinate with downstream	Recommendation: Increase F8X703 Ground Fault Delay	Resolved See 8.1.1	See 8.1.1

SY TANK FARM

Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
	feeder Breakers (BKR'2A, BKR-2B, BKR-2C, BKR-2D, BKR-3B).	to 0.25 seconds, and set feeder breaker(s) Ground Fault Delay to 0.10 seconds.		
8.5.5.3	Breaker F8X703 - The existing instantaneous setting does not coordinate with several downstream circuit breakers (See discussion in 8.5.5.1 above).	Increase F8X703 instantaneous setting to 12. This will provide selective tripping for short circuits on switchgear feeders, but will sacrifice fast tripping of the main for Switchgear bus faults and backup protection. Due to the falloff of available short circuit current, the "12" setting will effectively disable the instantaneous trip function for all but high magnitude (close) short circuits.	Resolved See 8.1.1	See 8.1.1
8.5.5.4	Breaker F8X702 - The Long Time Pickup and Long Time Delay settings of F8X702 and those of breaker BKR-6C do not provide selective coordination for overloads and short circuits. Pickup of main breaker F8X702 is presently set at 1000A. Pick up of BKR-6C is presently 960A. Additionally, the LTD curves are nearly identical. The maximum allowed LTPU setting of F8X702 is dictated by the NEC overcurrent protection requirements for the incoming conductors, and should not exceed 950A.	As a minimum, increase the LTD setting of F8X702 from 3.5 to 6. If the load requirements of the feeder will allow, decreasing the LTPU of BKR-6C will provide increased selectivity with F8X702 for low overloads.	Resolved See 8.1.1	See 8.1.1
8.5.5.5	Fuses CATH-DS-100 and CATH-D8-101 - These fuses are rated with a 30A trip. They are supplied by a common 20A circuit breaker (#23) in panel DP-108. The 20A circuit breaker will likely trip before either fuse in response to an overload or short circuit downstream of the fuses.	Accept as is.	Resolved	Accept as is.

SY TANK FARM

Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.5.6	Panel DP-E-002 - Electronic displays on main and feeder breakers in this panel were inoperable at the time of the field walk down, hence, trip settings could not be determined/verified. Recommended settings are provided, based upon information given on one line drawings, cable ampacities, and consideration of selective coordination.		Field Work Required	Work Package TFC-WO-08-2367 has been submitted to repair the displays.
8.5.5.7	BKR-B4 - The 1000A rating of MCC-E-001 main breaker BKR-B4 does not provide selective coordination with upstream breaker DP-E-002-Ckt1 (600A), nor the main breaker of panel DP-E-002 (1000A). However, BKR-B4 and DP-E-002-Ckt1 are in series in the dedicated incoming feeder to MCC-E-001, and the lack of selectivity between the breakers on the feeder may be tolerable (due to the sizing and trip values for the breakers). Additionally, the feeder breaker DP-E·002Ckt1 should isolate the panel main breaker from tripping due to feeder overloads.	Accept as is.	Resolved	Accept as is.
8.5.5.8	Panel EDS-DP-113 - There is little if any selective coordination between the overcurrent protective devices upstream of panel DP-113 to motor control center EDS-MCC·003-B. Short circuits on or downstream of panel DP-113 may trip the feeder breaker BKR-129 at the MCC. Overloads at the panel may trip any of several upstream devices.	NA	Resolved	Accept as is.
8.5.5.9	Fuse (20A) in starter for EX-C-1 does not coordinate with upstream branch breaker BKR-D2 in Panelboard D. Also, the 20A fuse is much larger than required by the load, and is a violation of NEC 430-52.	Replace fuse with 7.5A (max) time delay (preferred), or 9A (max) non-time delay fuse.	Resolved	This issue addressed by 8.1.3

SY TANK FARM

<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.1</td><td>Equipment evaluation output reports based upon short circuit ratings are located in Appendices G1 from PTW 3.8.1.0, and R1 from PTW 4.0.</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.1.1</td><td>No equipment was noted to be applied outside its short circuit ratings.</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.2</td><td>Equipment evaluation (feeders and transformers) based upon current rating and load flow current is presented in Appendices G2 and R2. Warnings noted by these reports include the following:</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.2.1</td><td>The following feeders were noted to be applied beyond their ampacity ratings:
<table>
<tr><th>Branch</th><th>Design Load (A)</th><th>Ampacity (A)</th><th>Comment</th></tr>
<tr><td>CBL-ATS-101-LD</td><td>97</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>CBL-DS-153</td><td>98</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>CBL-XFMR-106-S</td><td>98</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>WR-E003, E004</td><td>1737</td><td>950</td><td>Service Lateral supplying SGR-E-001 Bus #2</td></tr>
<tr><td>CBL-XFMR-106-P</td><td>42</td><td>40</td><td>EDS-XFMR-106 primary supply.</td></tr>
<tr><td>CBL-E-001-C5</td><td>81</td><td>70</td><td>K1-5-3 motor feeder. NEC violation. 125% x 65 FLA = 81A</td></tr>
<tr><td>HMS-117</td><td>69</td><td>55</td><td>Supplies VT-HVAC-3. PTW load assumed. Investigate and determine installed load.</td></tr>
<tr><td>CBL-HVAC-103</td><td>69</td><td>55</td><td>Supplies VT-HVAC-103. PTW load assumed. Investigate and determine installed load.</td></tr>
<tr><td>WR-FT104,FT105</td><td>749</td><td>620</td><td>Supplies HTR-302C-2</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc. purpose and guidelines for basic over current protection philosophy for insulated power cables
IEEE 242-2001 chapter 9 Cable Protection
H-14-030031, Series</td></tr>
</table>

SY TANK FARM

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.2.2	Calculated demand load on service transformer C6647P is approximately 250% of transformer rating.	NA	Resolved	This issue is addressed by issue number 8.1.2. The transformer demands will be reduced to 625A by the actions taken in 8.1.2.
8.6.2.3	Calculated demand load on transformer XFMR-101 is approximately 158% of transformer rating.	NA	Resolved	Walk down performed Document Change ECN726036-R0 was released to update the drawings. Reference: H-14-030031 Series
8.6.2.4	Calculated demand load on transformer XFMR-106 is approximately 108% of transformer rating.	NA	Field Work	Walk down was performed and determined that demand load on the transformer is 75%No further action required. Reference: H-14-0300031 Sh23 H-14-0300031 Sh 5

SY TANK FARM

Issue #	Equipment Evaluation Issues Special case 2	Recommendations	Status	Comment
9.1	Case 2 assumes all SWG-E-001 loads (Bus 1 & 2) are served by a single incoming line and associated transformer. Incoming line breaker 1B and bus tie breaker 4B are closed. Incoming line breaker 78 is open.	NA	NA	NA
9.2	Analysis is limited to load flow and voltage drop, and device evaluation based upon load flow.	NA	NA	NA
9.3	Calculation output reports for Case 2 are contained in appendices M through FF, with a summary and comparison of balanced three phase branch currents and voltage drops in appendix FF.	NA	NA	NA
9.4	The impacts to balanced branch load flows and bus voltage drops of the Case 2 configuration is summarized in Appendix FF. Downstream of the switchgear SWG-E-001, there were no significant changes in load flow. The largest included a 16A increase in the feeder supplying EDS-MCC-003-A and , and a 16A decrease in the current drawn by 498kW heater HTR-302C-2. Calculated overall total (balanced) load current decreased by nearly 20A(@480V). The significant impact of shifting the entire system load onto one incoming line and service.	NA	NA	NA

Issue #	Arc Flash Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Task# WRPS-PER-2008-0167.37

E-STARS[R] Report
Task Detail Report
07/08/2009 1036

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.37		
Subject	WRPS-PER-2008-0167; RES; Revise RPP-RPT-38265 Rev 1 to include an evaluation of electrical discrepancies for the four additional electrical load calcu		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	07/22/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Active
	Revise RPP-RPT-38265 Rev 1 to include an evaluation of electrical discrepancies for the four additional electrical load calculations found during the extent of condition review. Deliverable: Electronic copy of RPP-RPT-38265 Rev 2. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Hamm, Earnest R - Assign - Awaiting Response - Due Date - 07/16/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 07/20/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

No Comments

TASK DUE DATE HISTORY

Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	07/22/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0167.38

E-STARS[R] Report
Task Detail Report
07/08/2009 1036

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.38		
Subject	WRPS-PER-2008-0167; RES; Revise RPP-RPT-38265 Rev 2 to include an evaluation of all identified electrical discrepancies, to document which of these is		
Parent Task#	WRPS-PER-2008-0167	**Status**	Open
Reference	WRPS-PER-2008-0167	**Due**	09/29/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	Revise RPP-RPT-38265 Rev 2 to include an evaluation of all identified electrical discrepancies, to document which of these issues required fieldwork to resolve, and their final disposition. Deliverable: Electronic copy of RPP-RPT-38265 Rev 3. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Hamm, Earnest R - Assign - Awaiting Response - Due Date - 09/23/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 09/27/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf

COMMENTS

No Comments

TASK DUE DATE HISTORY

Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	09/29/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0167.39

E-STARS[R] Report
Task Detail Report
07/08/2009 1037

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.39		
Subject	WRPS-PER-2008-0167; RES; Evaluate adequacy of insulation associated with Issue 8.6.2.1 for SY Farm wiring, and provide results to the Electrical Disci		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 01/21/2009
Reference	WRPS-PER-2008-0167	**Due**	02/18/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/30/2008 0929	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Evaluate adequacy of insulation associated with Issue 8.6.2.1 for SY Farm wiring, and provide results to the Electrical Discipline Lead for incorporation into RPP-RPT-38265, Rev 1. Deliverable: Electronic copy of evaluation or documentation sent to Electrical Discipline Lead. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 01/20/2009 0959 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 01/20/2009 1023 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.39 CLOSURE RPP-RPT-38265.pdf

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 01/20/2009 0959
	Completed
	RPP-RPT-38265-R1 was released on 01/16/09. See attachment for objective evidence. The PER originator has declined involvement in the disposition.
Poster	Knight, Mark A (Bragg, David A) - 01/20/2009 1023
	Concur
	RPP-RPT-38265-R1 was released on 01/16/09. See attachment for objective evidence. The PER originator has declined involvement in the disposition.
Poster	^PER CAs (Owen, Annette) - 01/21/2009 1105

Task# WRPS-PER-2008-0167.39			
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	02/18/2009 0000
Modified	12/30/2008 0929 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

CH2M HILL DOCUMENT RELEASE FORM

(1) Document Number: RPP-RPT-38265	(2) Revision Number: 1	(3) Effective Date: 01/16/2009	
(4) Document Type: ☐ Digital Image ☒ Hard copy ☐ PDF ☐ Video	(a) Number of pages (including the DRF) or number of digital images 63		
(5) Release Type ☐ New ☐ Cancel	☐ Page Change	☒ Complete Revision	
(6) Document Title: Tank Farm Electrical Distribution Studies Issue Status			
(7) Change/Release Description: Updated to reflect the current status of resolution of the load studiy issues			
(8) Change Justification: NA			

(9) Associated Structure, System, and Component (SSC) and Building Number:		
	(a) Structure Location: Double Shell Tank Farms	(c) Building Number: 241-AP, AW, AY, AZ, SY, C
	(b) System Designator: NA	(d) Equipment ID Number (EIN): NA

(10) Impacted Documents:	(a) Document Type	(b) Document Number	(c) Document Revision
	NA		

(11) Approvals:

(a) Author (Print/Sign): E.R. Hamm *ER Hamm*	Date: 1/16/2009
(b) Responsible Manager (Print/Sign): M.A. Roberts *Mark Roberts*	Date: 01/16/2009
(c) Reviewer (Optional, Print/Sign): R.E. Nelson *By Telephone* *E.R. Hamm*	Date: 1/16/2009
(d) Reviewer (Optional, Print/Sign):	Date:

(12) Distribution:

(a) Name	(b) MSIN	(a) Name	(b) MSIN
M.J. Bryden	S5-07	G.J. Coleman	S7-24
E.R. Hamm	R2-58	E.A. Nelson	R2-58
R.E. Nelson	S5-07	M.A. Knight	S5-07
M.A. Roberts	S5-07		

Release Stamp

DATE: HANFORD RELEASE
STA: 4
ID:
JAN 16 2009
2

(13) Clearance	(a) Cleared for Public Release	(b) Restricted Information?	(c) Restriction Type:
	☒ Yes ☐ No	☐ Yes ☒ No	

(14) Clearance Review (Print/Sign): L Fox *LE Fox* Date: 1-16-2009

A-6003-881 (05/05)

TANK FARM ELECTRICAL DISTRIBUTION STUDIES Issues Status

ER Hamm / RE Nelson
Washington River Protection Solutions, LLC.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: UC:
Cost Center: Charge Code:
B&R Code: Total Pages: 63

Key Words: National Electric Code (NEC), Demand Load, Load Flow, Voltage drop, Short Circuit, Protective Device Coordination, Equipment Evaluation, Arc Flash Evaluation, Engineering Evaluation, SKM, PTW

Abstract: This report is the basline eletrical power distribution system studies issues for 241-SY, 241-AW, 241-AP, 241-AY, AZ-701/702, C-109, 241-AZ, and 241-AN.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

DATE: HANFORD RELEASE
STA: 4 ID:
JAN 16 2009 (2)

Release Approval — Date 1-16-2009 — Release Stamp

Approved For Public Release

Tank Farm Contractor (TFC) **RECORD OF REVISION**	(1) Document Number: **RPP-RPT-38265**	Page 1

(2) Title:

Tank Farms Electrical Distribution Studies Issues Status

Change Control Record

(3) Revision	(4) Description of Change – Replace, Add, and Delete Pages	Authorized for Release	
		(5) Resp. Engr. (print/sign/date)	(6) Resp. Mgr. (print/sign/date)
1 RS	Updated to reflect the current status of resolution of the load study status	ER Hamm ER Hamm 1/16/2009	MA Roberts See DRF ER Hamm 1/16/2009

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LIST OF TABLES

Table 1. Summary Status of Distribution Studies Issues 1

Table 2. Software Verification and Validation 2

LIST OF TERMS

FFS	Fluor Federal Services
HP	Horse Power
FLA	Full Load Amperes
NEC	National Electrical Code
PPE	Personal Protective Equipment
PTW	Power*Tools for Windows

1.0 PURPOSE

The purpose of this report is to provide a list of the Tank Farm Electrical Load Studies and track the status and the basis for closure of each issue. The document will be revised as new load studies are performed and issues are closed out.

This document was initiated following a DNFSB review of the Double Shell Tank Farm Electrical System in June 2008.

2.0 SCOPE

Double Shell Tank Farm electrical load study calculations as noted in Table 1. The status and basis for closure for issues identified in electrical load studies for other Tank Farm facilities will be included the next revision of this document.

3.0 SUMMARY OF ELECTRICAL LOAD STUDIES ISSUE STATUS

Table 1. Summary Status of Distribution Studies Issues

	Facility	Calculation Number	Number of Issues	Number Resolved	Number Requiring Field Work	Number Requiring Document Change ECNs
1	AN	RPP-CALC-24467 R.0	12	8	4	0
2	AP	RPP-8182 R. 0	8	2	4	2
3	AW	RPP-8183 R.1	11	7	3	1
4	AY	RPP-CALC-24468 R.0	11	7	4	0
5	701/702	RPP-CALC-24466 R.0	0	0	0	0
6	AZ	RPP-CALC-24465 R.0	0	0	0	0
7	C-109	RPP-CALC-32223 R.0	0	0	0	0
8	SY	RPP-8185 R.0	33	23	10	0
	Totals		75	47	25	3

4.0 SOFTWARE VERIFICATION AND VALIDATION (V&V)

The Software verification and Validation (V&V) table provides the SKM Power Tools for Windows* Software Version and the referenced V&V documentation for each electrical load study.

Table 2. Software Verification and Validation

	Contractor	Calculation Number	Software Used	Software Version Number	V&V Document Number	Comments
1	Fluor Federal Services	RPP-8182 R. 0	SKM Power*Tools	3.8.1.0 Build 2 Version 4.0.0.0 Beta 6	RPP-9886 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
2	Fluor Federal Services	RPP-8183 R.1	SKM Power*Tools	5.0.2.8 Build 2	HNF-26563 Rev. 0	
3	Fluor Federal Services	RPP-8185 R.0	SKM Power*Tools	3.8.1.0 Build 2 4.0.2.6 Build 1	RPP-9886 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
4	Fluor Federal Services	RPP-CALC-24465 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
5	Fluor Federal Services	RPP-CALC-24466 R.0	SKM Power*Tools	5.03.0 Build 1	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
6	Fluor Federal Services	RPP-CALC-24467 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
7	Fluor Federal Services	RPP-CALC-24468 R.0	SKM Power*Tools	5.0.2.8 Build 2	HNF-19648, Rev.0 RPP-9886, Rev.0 HNF-26563 Rev. 0	RPP-9886 covers PTW Software versions 3.8.1.0 through 4.0.2.3 (build 1)
8	ARES Corporation	RPP-CALC-32223 R.0	SKM Power*Tools	Version 6.0.2.8	VV-07-07-004	

5.0 AN TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24467 Rev 0	06/21/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	3	0	0	3
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	1	1	0	0
4	Short Circuit Study	2	2	0	0
5	Protective Device Coordination	4	1	0	3
6	Equipment Evaluation Report	2	0	0	2
7	Arc Flash Evaluation Study	0	0	0	0
	Total	12	4	0	8

AN TANK FARMS

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Supernatant pump AN06A-WT-P-016 has a 25 HP motor. The NEC FLA for a 25 HP motor is 34A. The motor branch circuit conductors are shown as #8 AWG. The NEC rated ampacity for #8 conductors is 40A @ 60 deg. C (Table 310.16). NEC article 430.22 requires that the motor conductors be rated at 125% of the motor FLA (34 x 1.25 = 42.5A). The 60 deg. C ampacity of the #8 conductors is inadequate for the 40HP motor.	1) Verify conductor termination and equipment is rated for 75 deg. C (50A ampacity of # 8 conductors); or 2) Replace the #8 motor circuit conductors with #6 AWG conductors (55A).	Resolved	The cabinet is compliant with UL-508A, "Industrial Control Panel" Section 29.6(a), internal wiring sizing. This section use 100% FLA for sizing the wires. The Field wiring from the MCC terminal strip to the load is #6 AWG which is good for 55Amp. The field installation is NEC compliant. No further action required ECN-723859, Rev.0 changed Drawing H-14-030001, sh.2 to show #6AWG connected to AN06A-WT-P-016 Reference: H-14-030001, sh.2, R.13
8.1.2	Annulus exhaust fan AN241-VTA-EF-003 is shown as 10 HP. The NEC FLA for a 10 HP motor is 14A. NEC article table 430.52 requires that the maximum trip rating of a breaker supplying a single motor be 250% of the FLA (14 x 2.5 = 35A), unless that breaker does not permit the motor to start. Therefore, unless there is a historical starting problem, breaker BKR-118 (50A) is in violation of the NEC.	Replace BKR-118 with a breaker rated at 35A, maximum.	Resolved	The field configuration indicated the breaker is 30A breaker. Drawing H-14-030001, sh.3, R.6 have been changed by ECN-723859, R.0 to reflect field configuration Reference: H-14-030001, Sh.3, Rev.6 PER 2005-2613 and ECN: 723859 Rev.0
8.1.3	Building AN273 coolant pump control panel AN273-GLY-CP-101 is supplied from fused disconnect switch AN273-GLY-DS-101. One line diagram H-14-030001 Sh. 2 Rev 10 and elementary diagram H-14-030301 Sh. 1 Rev 1 indicate 30A fuses in the switch. Plan drawing H-2-93194 Sh. 1 Rev 1 indicates #12 conductors on the load side of disconnect switch. The 30A fuses do not provide adequate over current protection (20A) for the #12 conductors in accordance with NEC 240.4.D. And the 30A fuses exceed the over current protection allowed by NEC 430.62.	Verify conductor size. If conductors are #12, replace fuses with 20A units.	Resolved	The field configuration indicated that 15A fuses are installed, the 15A fuses provide adequate over current protection for #12 conductors Reference: H-14-030001. sh.2, Rev.13 PER 2005-2613 ECN: 723859 Rev.0.

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Issue #	Demand Load Issues	Recommendations	Status	Comment
NA	NA	NA	NA	NA

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.4	The voltage drop calculation indicates the following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus: Bus Voltage Drops > 8.3% (480V Assumed at Utility Transformer Secondary Bus) Component Name: High Phase Voltage Drop (%): Comment BUS-DP-105: 9.48: Verify loads on DP-105 XFMR-102-SEC: 9.41	NA	Field Work Required	Power to the SHIMS cabinets has been removed (Breakers Opened) , thereby reducing the calculated voltage drop from 9.48% to 4.79%. ECN -725722 R.0 has been prepared to lift leads and de-energize DP-105 References: H-14-030001, Sh.1, Rev. 13 H-14-030001, Sh.11, Rev.9 ECN-725722, Rev.0

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
8.4.4	Disconnect switch AN273-EDS-DS-112 is non-fused. The nominal short circuit rating for a non-fused disconnect switch is 10kA. The calculated short circuit current at the switch location is approximately 15.6 kA.	Fused disconnect switches assume the short circuit ratings of the installed fuse. Replace DS-112 with a 100A fused disconnect switch with 90A fuses suitable for the available short circuit current.	Field Work Required	Change the switch from a non-fused to a fused switch. Work Package TFC-WO-08-0276 ECN ECN-725990-R0 - -Released Work package is Ready To Work Reference: H-14-030001, Sh.2, Rev.13

AN TANK FARMS

<table>
<tr><th>Issue #</th><th>Short Circuit Study Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr>
<td>8.4.5</td>
<td>Disconnect switch AN241-EDS-DS-120 is non-fused. The nominal short circuit rating for a non-fused disconnect switch is 10kA. The calculated short circuit current at the switch location is approximately 15.8 kA.
<table>
<tr><th colspan="2">Switch</th><th colspan="2">Fuse</th><th rowspan="2">Calculated Short Circuit Current (kA)</th><th rowspan="2">Comment</th></tr>
<tr><th>PTW Name</th><th>PTW Name</th><th>Rating (kA)</th></tr>
<tr><td>DS-100</td><td>FU-DS-100</td><td>10</td><td>18.5</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
<tr><td>DS-113</td><td>FU-DS-113</td><td>10</td><td>15.6</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
<tr><td>DS-127</td><td>FU-DS-127</td><td>200</td><td>17.9</td><td>Assumed Fuse Type (Bussmann FRS). Verify.</td></tr>
<tr><td>VT-DS-101</td><td>FU-VT-DS-101</td><td>10</td><td>15.6</td><td>Assumed Fuse Type (Bussmann RES). Verify.</td></tr>
</table>
</td>
<td>Fused disconnect switches assume the short circuit ratings of the installed fuse. Replace DS-120 with a 100A fused disconnect switch with 100A fuses suitable for the available short circuit current.

Numerous other disconnect switches are noted in the PTW Equipment Evaluation report to be applied beyond their short circuit rating. This evaluation is based upon the non-fused rating (10kA) of the switch. However, the short circuit rating of a fused-disconnect switch is that of the fuse, and in some cases, a non-fused disconnect switch may be protected by an upstream fuse. For each of the fused disconnect switches applied at a location with short circuit current greater than 10kA, fuse ratings must evaluated to determine adequacy of the fused switch. All fused switches in this study are adequately protected by their fuses with exception of those in the following table. Lacking specific information for these fuses, assumed fuse types were utilized. Actual installed fuse types should be determined and evaluated for suitability considering the available short circuit current.</td>
<td>Field Work Required</td>
<td>Change the switch from a non-fused to a fused switch.
Work package TFC-WO-08-0277
ECN-725995-R0-- Released
Work package is Ready To Work
Reference:
H-14-030001, Sh.2, Rev.13
H-14-030001, Sh.1, Rev.24</td>
</tr>
</table>

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.3.1	General – Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at MCC-001, MCC-002, DP-103, for example.	NA	NA	NA
8.5.3.2	MCC-001 feeder fuse FU-DS-127 (400A) does not coordinate with existing settings of MCC-001 main breaker BKR-101 for feeder overcurrents above approximately 2kA (Ref. TCC MCC-001 in Appendix E). Overcurrents greater than 2kA on the feeder supplying DP-130 and the exhauster skids will trip the MCC-001 main breaker. Short circuit current at DP-130 exceeds 9kA.	1) Raise the short time pickup setting of BKR-101 to its maximum setting of 8x (8000A). This will provide improved coordination up to approx 7kA. A STPU setting of 5x (5000A) or greater on BKR-101 will miscoordinate with the existing STPU setting (4800A) of upstream breaker BKR-100, so BKR-100 STPU would have to be raised to at least 8x (9600A)(Ref. TCC DP-130-MAIN(1) in Appendix E); or 2) Replace the 400A fuse with a circuit breaker with characteristics more closely matching the upstream breakers (Ref. TCC DP-130-MAIN (2) in Appendix E).	Field Work Required F5.1	Update the trip settings for BKR 100 and 101. Reference: H-14-030001, Sh.1, Rev.24 PM# WDL-110-523 Work Package is Ready To Work?
8.5.3.3	Panel DP-130 main breaker does not selectively coordinate with upstream fuse FU-DS-127 nor the MCC-001 main breaker BKR-101 for overcurrents greater than approximately 2kA (Ref. TCC DP-130-MAIN in Appendix E). See also 0 above.	Raise the short time pickup setting of BKR-101 to at least 3x (3000A) to provide coordination with the DP-130 main breaker.	Resolved	Same breaker as 8.5.3.2. BKR 101 will be set to 8000 amps which is well above the recommended 3000 amp. See 8.5.3.2 above

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<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.3.4</td><td>Fuse FU-DS-117 in disconnect switch DS-117 does not selectively coordinate with MCC-001 main breaker BKR-101 for overcurrents greater than approximately 2kA (Ref. TCC DS-117 in Appendix E). The short time pickup setting (2000A) of BKR-101 does not allow coordination with the 200A feeder fuse.</td><td>Raise the short time pickup setting of breaker BKR-101 to at least 4kA. See also 0 above.</td><td>Resolved</td><td>Same breaker as 8.5.3.2.
BKR 101 will be set to 8000 amps which is well above the recommended 3000 amp.
See 8.5.3.2 above</td></tr>
<tr><td>8.5.3.5</td><td>Where identical branch circuits are protected by the same device, a TCC was generated for only one.</td><td>NA</td><td>NA</td><td>NA</td></tr>
<tr><td>8.5.3.6</td><td>Although they meet the NEC requirements for overcurrent protection, comparison of the cable thermal damage curve with the time-current characteristics of the upstream protective device indicates the following cables may not be adequately protected from damage throughout the entire range of overcurrent from overloads to short circuits. Cable damage temperature is assumed to be 150 deg. C with an initial operating temperature of 75 deg. C. Field verification of installed cable insulation type may be warranted.
<table>
<tr><th></th><th>Cable Name</th><th>Reference TCC</th><th>Wire Size</th><th>Protective Device (Upstream)</th><th>Comment</th></tr>
<tr><td>1</td><td>CBL-BKR-105LD</td><td>BKR-105</td><td>10</td><td>BKR-105
C-H HFD 30A</td><td></td></tr>
<tr><td>2</td><td>WR82</td><td>BKR-118</td><td>10</td><td>BKR-118
C-H HFD 50A</td><td>Motor Circuit</td></tr>
<tr><td>3</td><td>WR85</td><td>BKR-121</td><td>12</td><td>BKR-121
C-H HFD 15A</td><td></td></tr>
<tr><td>4</td><td>WR87</td><td>BKR-122</td><td>12</td><td>BKR-122
C-H HFD 20A</td><td></td></tr>
<tr><td>5</td><td>WR228</td><td>BKR-123</td><td>12</td><td>BKR-123
C-H HFD 15A</td><td></td></tr>
<tr><td>6</td><td>WR229</td><td>BKR-124</td><td>12</td><td>BKR-124
C-H HFD 15A</td><td></td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc.</td></tr>
</table>

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Issue #	Protective Device Coordination Issues						Recommendations	Status	Comment
	7	WR572	BKR-130	10	BKR-130 C-H HFD 30A				purpose and guidelines for basic over current protection philosophy for insulated power cables IEEE 242-2001 chapter 9 Cable ProtectionH-14-030001, Sh.1, Rev.24 H-14-030001, Sh.2, Rev.13 H-14-030001, Sh.3, Rev.6
	8	CBL-BKR-351	BKR-350	8	BKR-350 Sq-D FA 100A	Tap Conductor, downstream protection.			
	9	CBL-BKR-451	BKR-450	8	BKR-450 Sq-D FA 100A	Tap Conductor, downstream protection.			
	10	WR138	DP-103-13	12	DP-103-13 C-H FD 20A				
	11	WR139	DP-103-14	12	DP-103-14 C-H FD 20A				
	12	CBL-DS-111	DP-104	12	DP-103-37 C-H FD 15A				
	13	WR93	DP-107-11	12	BKR-DP107-11 C-H HFD 20A				
	14	WR94	DP-107-12	12	BKR-DP107-12 C-H HFD 20A				
	15	WR00-76	DP-112	8	BKR-132 C-H HFD 100A	Not NEC compliant if tap > 25 ft length. Verify tap conductor length.			
	16	WR210-E	DP-129-MAIN	6	DP-130-6 Sq-D FC 40A	Tap conductor, downstream protection.			

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.1.2</td><td>Protective equipment evaluation based upon load flow current indicates the following protective equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="4">Protective Device Evaluation Continuous Current Ratings Exceeded</th></tr>
<tr><th></th><th>Component Name</th><th>Rating Exceeded</th><th>Comment</th></tr>
<tr><td>1</td><td>BKR-106</td><td>365A > 225A rating</td><td>DP-103 Feeder Breaker</td></tr>
<tr><td>2</td><td>C8X713</td><td>1.27A > 1A rating</td><td>Utility Transformer Primary Fuse.</td></tr>
<tr><td>3</td><td>DP-103-MAIN</td><td>365A > 225A rating</td><td>Verify DP-103 loads reported on H-14-030001 Sh. 9 rev 4.</td></tr>
<tr><td>4</td><td>(Breaker) DP-103-1</td><td>21A > 20A rating</td><td>Floodlights, poles 1,2,3,7. Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported loads.</td></tr>
<tr><td>5</td><td>FU-DS-103</td><td>18A > 15A rating</td><td rowspan="7">Pole 1-7 Flood Light Circuits. Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported loads.</td></tr>
<tr><td>6</td><td>FU-DS-104</td><td>18A > 15A rating</td></tr>
<tr><td>7</td><td>FU-DS-105</td><td>18A > 15A rating</td></tr>
<tr><td>8</td><td>FU-DS-106</td><td>18A > 15A rating</td></tr>
<tr><td>9</td><td>FU-DS-107</td><td>18A > 15A rating</td></tr>
<tr><td>10</td><td>FU-DS-108</td><td>18A > 15A rating</td></tr>
<tr><td>11</td><td>FU-DS-118</td><td>18A > 15A rating</td></tr>
<tr><td>12</td><td>(Breaker) DP-103-13</td><td>23A > 20A rating</td><td rowspan="2">Impact Wrench Station #1. Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.</td></tr>
<tr><td>13</td><td>FU-DS-109</td><td>23A > 15A rating</td></tr>
<tr><td>14</td><td>(Breaker) DP-103-14</td><td>23.6A > 20A rating</td><td rowspan="2">Impact Wrench Station #2. Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.</td></tr>
<tr><td>15</td><td>FU-DS-110</td><td>23.6A > 15A rating</td></tr>
<tr><td>16</td><td>(Breaker) DP-103-8</td><td>70.4A > 60A rating</td><td>Load per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>The active loads for these devices are well below the calculated values shown in the table, and below the Ampere Interrupt Capability rating for the protective devices.

This condition is considered acceptable.</td></tr>
</table>

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.2.1</td><td>Non-Protective equipment evaluation based upon load flow current indicates the following equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="4">Non Protective Device Equipment Evaluation, Continuous Current Ratings Exceeded</th></tr>
<tr><th></th><th>Device</th><th>Criteria Failure</th><th>Comment</th></tr>
<tr><td>1</td><td>CBL-DP-107</td><td>55.4A > 55A Ampacity</td><td>Verify Panel DP-107 loads.</td></tr>
<tr><td>2</td><td>CBL-SA-CMP-001</td><td>42.5A > 40A Ampacity</td><td>25 HP motor, NEC FLA = 34A, 125% FLA minimum circuit ampacity = 42.5A. #8 @ 60 deg C ampacity of 40A is insufficient for motor.</td></tr>
<tr><td>3</td><td>WR137</td><td>70A > 55A Ampacity</td><td></td></tr>
<tr><td>4</td><td>WR138</td><td>23A > 20A Ampacity</td><td>Impact Wrench Station #1 feeder. See 8.6.1.2.</td></tr>
<tr><td>5</td><td>WR139</td><td>23.6A > 20A Ampacity</td><td>Impact Wrench Station #2 feeder. See 8.6.1.2.</td></tr>
<tr><td>6</td><td>WR8</td><td>363A > 230A Ampacity</td><td>DP-103 feeder. See 8.6.1.2.</td></tr>
<tr><td>7</td><td>XFMR-102</td><td>84A > 78A rating</td><td>37.5kVA FLA = 78.1A. DP-105 feeder circuit. Verify DP-105 loads.</td></tr>
<tr><td>8</td><td>XFMR-105</td><td>23.5A > 20.8A rating</td><td>10kVA FLA = 20.8A. DP-107 feeder circuit. Verify DP-107 loads.</td></tr>
<tr><td>9</td><td>XFMR-351</td><td>23A > 20.8A rating</td><td>10kVA FLA = 20.8A. VT-DP-351 feeder circuit. Verify VTP-DP-351 loads.</td></tr>
<tr><td>10</td><td>XFMR-451</td><td>23A > 20.8A rating</td><td>10kVA FLA = 20.8A. VT-DP-341 feeder circuit. Verify VTP-DP-341 loads.</td></tr>
<tr><td>11</td><td>XFMR-C6032L</td><td>1.27A > 0.7A rating</td><td>10kVA Utility Transformer</td></tr>
<tr><td>12</td><td>DP-103 Ckt. 1</td><td>21A > 20A rating</td><td rowspan="4">Loads per panel schedule drawing H-14-030001 Sh. 9 rev 4. Verify reported load.</td></tr>
<tr><td>13</td><td>DP-103 Ckt. 7</td><td>66.7A > 60A rating</td></tr>
<tr><td>14</td><td>DP-103 Ckt. 8</td><td>66.7A > 60A rating</td></tr>
<tr><td>15</td><td>DP-103 Ckt. 13</td><td>23A > 20A rating</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>The calculated load values do not consider demand or diversity factors and the measured loads for this distribution system is significantly lower that the calculated values.</td></tr>
</table>

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Issue #	Equipment Evaluation Issues				Recommendations	Status	Comment
	16	DP-103 Ckt. 14	23.6A > 20A rating				
	17	DP-103 Ckt. 26	66.7A > 60A rating				
	18	DP-111 Ckt. 2	33A > 20A rating	Load per panel schedule drawing H-14-030001 Sh. 21 rev 0. Verify reported load.			
	19	DP-112 Ckt. 2	33A > 20A rating	Load per panel schedule drawing H-14-030001 Sh. 22 rev 0. Verify reported load.			

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
8.7.5	The Arc Flash Evaluation indicates all evaluated fault locations in the distribution system produce arc flash incident energy values below 1.2 cal/cm^2 (PPE Class 0) except for the following:	NA	NA	No Actions Necessary

Arc Flash Incident Energy > 1.2 cal/cm^2			
Bus Fault Location	Incident Energy (cal/cm^2)	PPE Class	Comment
BUS-ENCL-100	44.7	Dangerous!!!	Secondary fault cleared by primary fuse.
BUS-GLY-PS-101	19	Class 3	
BUS-WT-P-010	3.28	Class 1	
EDS-MCC-001	3.25	Class 1	
BUS-WT-P-013	2.19	Class 1	
HH-29	1.96	Class 1	
LINE C8-L6	1.84	Class 1	
BUS-DS-127	1.83	Class 1	
BUS-WT-P-005	1.71	Class 1	

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Issue #	Arc Flash Evaluation Study				Recommendations	Status	Comment
	BUS-WT-P-014	1.71	Class 1				
	BUS-WT-P-001	1.56	Class 1				
	BUS-P-101-1A	1.48	Class 1				
	BUS-DS-124	1.44	Class 1				
	BUS-P-101-1	1.36	Class 1				
	BUS-WT-P-020	1.24	Class 1				
	Line Side Fault Location						
	EDS-MCC-001 (BKR-101)	11.9	Class 3				
	BUS-DP-130 (DP-130-MAIN)	3.3	Class 1				

6.0 AP TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8182 Rev 0	08/20/2001	3.8.1.0 Build 2 Version 4.0.0.0 Beta 6	1999	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring Document Change ECN	Issues Resolved
1	NEC Issues	7	3	2	2
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	1	1	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	8	4	2	2

AP TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Panel EDS-DP-101 has no main breaker, and is supplied by conductors from the secondary of transformer XFMR-101, without intervening overcurrent protection. There is no overcurrent protection for the secondary conductors as required by NEC Article 240-21(c). Note, the transformer primary overcurrent device provides transformer protection in accordance with NEC Article 450-3(6), however, required secondary conductor overcurrent protection does not exist.	Install secondary conductor overcurrent protection (fuses or circuit breaker, 110A maximum) between transformer and panelboard.	Resolved	Breaker has been installed per ECN 724298 Rev.0 Reference: H-14-030003 Sh 2 ECN724298
8.1.2	Primary supply circuit for XFMR-104, fed from MCC-002 circuit breaker BKR-136 is #12 copper conductor, MTW/THW. The ampacity of #12 conductor, is 25A (@ 60 & 75 degrees C) per NEC Table 310-16, but additionally are limited to a maximum 20A overcurrent device per NEC 240-3, The 30A circuit breaker BKR-136 does not provide adequate overcurrent protection for the #12 conductors.	Change existing 30A circuit breaker BKR-I36 to be a 20A circuit breaker.	Field Work Required	ECN-726001-R0 is in development. PER-2008-167AP241-EDS-DP-110 has a total load of 8640W per H-14-030003, SH.16. The 8640w load equates to a 18A on the primary conductor. The #12 wire is rated for 20A. There is no immediate hazard but the circuit is not NEC compliant. Replace # 12 wire with #10 Reference: NEC-240-4(d) H-14-030003 Sh. 17, R-2 H-14-030003 Sh. 18, R-2 H-14-030003 Sh. 3, R-11
8.1.3	The feeder circuit breaker BKR-113 in motor control center MCC-001 does not provide adequate overcurrent protection for a portion of the feeders supplying rectifier disconnect switches CATH-DS-100 and CATH-DS-101. Feeders originating from circuit breaker BKR-113 are reported to #10 AWG out to the location of the disconnect switches, but are spliced to #12 AWG conductors prior to terminating	NA	Engineering Document Change (ECN) Required	Tap rules per NEC-240.21(b)(1) apply, the installation is NEC compliance. No further action required. An Engineering Change Notice is required to show this configuration on the drawing Reference NEC-240.21

AP TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	at the line side of the disconnect switches. The maximum allowable overcurrent protection of #12 conductors is 20A (NEC 240-3(d)). BKR-113 is has a 30A trip rating. The #12 conductors are not adequately protected. However, considering exception allowed by NEC 240-21(b) (1), (feeder taps are not over 10 ft.) the installation is NEC compliant.			H-14-030003, Sh.2
8.1.4	The calculated load of EDS-DP-1 04, based upon assumed assigned load and diversity for the receptacle branch circuits, exceeds the ampacity of the incoming feeder conductors, as well as the rating of the incoming feeder breaker. However, the incoming feeder is adequately protected against overcurrent by the feeder breaker BKR-1 17. The assumed loads assigned to the panel branch circuits by this study may be unrealistically excessive. Note: Assumption 6.11, indicates that 4 out of 5 welding receptacles are loaded at 40kw each.	Limit allowable and actual panelboard loading to a maximum of 190 kVA and 230A per phase. Calculated and allowable panelboard loads can be reduced by control of Individual loads, and/or limiting simultaneous use of available receptacles in panelboard EDS-DP-104.	Field Work Required	The configuration in NEC compliant, installation of a main breaker in panel 104 is recommended to improve selective breaker coordination. Work Order WO-08-2309 has been prepared. ECN-725942-R0 Is being Developed. Reference: H-14-03003 Sh1
8.1.5	The calculated design load flow current (31A) on the glycol chiller feeder on the load side of disconnect switch AP273-GLY-DS-1 01 exceeds the ampacity (30A) of the #10AWG feeder conductors. However, calculated load flow current was based upon the loads given by the panel schedule drawing for panel AP273-EDS-DP-108. Examination of the loads assigned by the panel schedule, however, indicates actual loads may be less. The one line diagram indicates the chiller load includes a 10 HP compressor motor, and two 3/4 HP fans. NEC full load amps for these motors is: 14, 1.6, and 1 .6 Amps respectively. Considering 125% of the largest motor, this is a 20.7A load, which equates to 17.2 kVA and 13.8 kW at 80% pf. The panel schedule for this load indicates a 20 kW load. The existing conductors are	Conductor ampacity based upon calculated load using motor ratings as given on one line diagrams is in compliance with NEC. Verify load values on panel schedule EDS-DP-1 08 for Glycol Chiller (Ckt. 1).	Field Work Required	Walkdown is complete. Need to lift lead for Glycol system to remove the loading on Panel DP-108 ECN-726031-R0 has been Released Work Package TFC-08-2656 has been prepared. Ref: H-14-030003 Sh. 2, R-13

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	adequate for the 20.7A load of the three motors, calculated based upon nominal HP rating indicated on one line diagram, and NEC FLA.			
8.1.6	Size of conductors supplying panel AP271-EDS-DP-105 from circuit 32 of AP271-EDS-DP-104 could not be verified during last field walk down (outage required). Documentation depicting the installation of the feeder conductors (and the panel) could not be located. The walk down did, however, verify the rating of the feeder breaker in panel AP271-EDS-DP-104 to be 100A. A #1/0 AWG minimum size conductor is required to carry the calculated load flow for the existing panel DP-1 05 loads. The feeder in this study is represented by #1/0 conductors. While no specific code violation can be noted, based upon the rating (100A) of the feeder breaker in panel AP271-EDS-DP-104, the minimum size of the feeder conductors allowed by code is #1/0 AWG Copper THHN.	Verify size of conductors supplying panel DP-105 to be at least #1/0 AWG.	Engineering Document Change ECN Required	A walk down was performed on 10/6/2008, the conductors from AP271-EDS-DP-104 to panel AP271-EDS-DP-105 is #1 AWG which has an ampacity of 110 A @ 60 degrees C, no NEC violation exists. A document change ECN is required to show the wire size on the drawing. Ref: H-14-030003, Sh.2, Rev.13
8.1.7	Circuit breakers in panel AP241-EDS-DP-110 are mounted in two rows, and oriented in a vertical position. Half of the breakers are arranged such that the UP position of the handle is the "ON" position of the breaker. This is a violation of NEC article 240-81.	Rearrange / replace panel such that breaker handles are operated in horizontal plane, or, use as is with facility management acceptance and approval.	Resolved	The As-Built drawings for the AP Tank Farm were released between 1982 and 1986. The NEC requirement (article 240.81) was not incorporated until the 1987 NEC. These breakers provide overcurrent protection and are operated during facility operation. The qualified electrical workers are familiar with the configuration. Therefore, this configuration considered acceptable.

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Issue #	**Demand Load Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Load Flow & voltage Drop Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Short Circuit Study Issues**	**Recommendations**	**Status**	**Comment**
NA	NA	NA	NA	NA

Issue #	**Protective Device Coordination Issues**	**Recommendations**	**Status**	**Comment**
8.5.4	Where existing protective device coordination could be improved using existing equipment, recommended setting changes are provided and summarized in the following Table.	Update Breaker Trip Settings.	Field Work Required	1) BKR 101 trip unit was changed from Amptector I-A Model LIG to Digitrip 910 LIG. The new trip unit is set to the maximum value on the LTD and to 8X on the INST. The vendor curve was used to set the breaker trip settings comparable with recommended trip settings shown in the table. 2) BKR 103 and BKR 116 need to be adjusted during the performance of the MCC Breaker PM. PM# WDL-110917 Prepared

Circuit Breaker Trip Settings, Summary

Breaker	Existing Setting				Recommended Setting			
	LTPU	LTD	STPU	INST	LTPU	LTD	STPU	INST
BKR-101	0.9	4	NA	10	1	28	NA	10
BKR-103	1	Fixed	8	NA	1	Fixed	5	NA
BKR-116	Fixed	Fixed	NA	Lo	Fixed	Fixed	NA	4

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.41	General — Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at MCC-002, and MCC-003. At MCC-002 for example, a short circuit at the annulus exhaust fans may have sufficient fault energy to trip the MCC-002 main breaker. A potential solution is to raise the instantaneous trip setting of the main breaker. In this example of MOC002, however, even the highest available setting (6000A) is insufficient to provide complete coordination of Instantaneous tripping. At MCC-003, there is sufficient available short circuit current at the location of the end use loads to trip the incoming feeder breaker (BKR-1 16) supplying all of MCC 003.	NA	NA	NA
8.5.4.2	Circuit Breaker BKR-1 01 (feeder breaker to MCC-001) — Miscoordination of existing settings is present between breakers BKR-1 01 and BKR-1 04, Existing settings may allow the upstream breaker BKR-1 01 to trip for an overload, or low level fault on MCC-002. The recommended settings for BKR-1 01 provide increased selectivity with downstream devices. Reference time current curve TCC: MCC-001 in Appendices E and P.	The recommended settings for BKR-101 provide increased selectivity with downstream devices	NA	Breaker trip unit was changed from Amptector I-A Model LIG to Digitrip 910. The new trip unit is set to the maximum value on the LTD and to 8X on the INST. There is no setting on the new trip unit of the breaker for a setting of 10x. See8.5.4 above
8.5.4.3	Circuit Breakers BKR-1 03, -104, -127— There is overlap of the low level short circuit trip characteristics of these three breakers. It is possible that a low level fault at MCC-002 may trip the main breaker (BKR-1 03) of MCC-001, before the MCC-002 feeder breaker (BKR-1 04) or MCC-002 main breaker (BKR-127) can clear the fault. There are no available adjustments on the existing breakers that Will affect this condition. Reference Time Current Curve MCC-002 in Appendices E and P.	NA	NA	NA

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.4.4	Circuit Breaker BKR-1 16 (feeder breaker to MCC-003) — Selective coordination with downstream devices can be improved by increasing the instantaneous setting of BKR-1 16 (See 6.5.4). Reference time current curves TCC: SA-CMP-001 and TCC: EDS-DP-106 in Appendices E and P.	NA	NA	The Instaneous trip setting for the breaker cannot be increased as specified. The impact of unplanned outages caused by mis-coordination of this breaker is minimal. No further action is required.

Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
NA	NA	NA	NA	NA

7.0 AW TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8183 Rev 1	03/31/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	5	0	1	4
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	2	2	0	0
6	Equipment Evaluation Report	3	0	0	3
7	Arc Flash Evaluation Study	1	1	0	0
	Total	11	3	1	7

AW TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Circuit breakers in panels AW241-EDS-DP-100 and AW241-EDS-DP-201A are mounted in two rows, and oriented in a vertical position. Half of the breakers are arranged such that the UP position of the handle is the "OFF" position of the breaker. This is a violation of NEC article 240-81.	Rearrange / replace panel such that breaker handles are operated in horizontal plane, or, use as is with facility management acceptance and approval.	Resolved	The facility was installed with as built drawing released late 1982, the NEC 240-81 which prohibits horizontal mount of the breaker became effective in the 1987 code, and therefore this is considered to be within the code of record. These breakers are not used for routine operation and can be used by qualified electrical technicians only, therefore this configuration considered satisfactory H-14-030002, Sh.1, Rev.18 H-14-030002, Sh.3, Rev.10 H-14-030002, Sh.5, Rev.1 H-14-030002, Sh.13, Rev.6
8.1.2	Supernatant Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011, AW05A-WT-P-014, and AW06A-WT-P-017 are 30HP. The NEC FLA for 30HP motor is 40A. PTW calculated load flow for the motors (assumed to be operating) is approximately 43A. The motor circuit conductors between the receptacle and the motor are indicated to be #8AWG. The NEC ampacity of a #8 flexible cord or cable is at most 40A per NEC Table 400-5(A) and 48A per NEC Table 400-5(B). The calculated load flow to the 30HP motors exceeds the ampacity of the motor circuit conductors. NEC article 430-22 requires motor circuit conductors to be rated for 125% motor FLA (40 x 1.25 = 50A). The #8 conductors are in violation of the NEC.	Increase size of motor circuit conductors (50A minimum).	Document Change ECN Required	1) Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011 have been disconnected per ECN-724186, R.0 and Drawing H-14-030002, sh.1, Rev.17 2) Pump AW06A-WT-P-017 conductors have been changed by ECN-664744, R.0 to show #6 wire is installed. 3) A walkdown was performed on 10/6/2008 on Pump AW05A-WT-P-014 circuit and verified the cable between MCC compartment down to the MCC terminal strip is #8 (About 4 feet), and the cable between the MCC terminal strip to the field is #6, the SOW cable going to the pump is also # 6 cable. The cabinet is compliant with UL-508A, "Industrial Control Panel" Section 29.6(a), internal wiring sizing. This section use 100% FLA for sizing the wires. The Field wiring from the MCC terminal strip to the load is #6 AWG which is good for 55Amp. The field

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
				installation is NEC compliant. No further action required ECN-664744, R.0. Changed the wire size to show #6AWG wire connected to AW06A-WT-P-017. ECN Required Reference: H-14-030002
8.1.3	Circuit breaker BKR-102 has a 60A trip rating. The feeder originating at BKR-102 is #8 AWG, with an NEC ampacity of 40A. The feeder conductor is not adequately protected by the feeder breaker. This is a violation of NEC 240-3.	Replace feeder with larger conductors (#6 AWG), or replace BKR-102 with one of lower trip rating (40A).	Resolved	Confirmed that a #6 AWG cable is installed. The conductor was replaced by a #6 AWG conductor by ECN-723356, R.0 Reference: See H-14-03002 Sh.1. ECN-723356, R.0
8.1.4	Motor circuits supplied by circuit breakers BKR-104, BKR-105, and BKR-113 are #8 AWG with an NEC ampacity of 40A. The 30HP motors have an NEC FLA of 40A. NEC article 430-22 requires conductors to be rated for 125% FLA (50A). The #8 conductors are not in compliance with NEC article 430-22.	Replace conductors with larger size (#6 minimum).	Resolved	This item is Duplicate of 8.1.2 No action required.
8.1.5	Secondary conductors of transformer XFMR-108 are #4 AWG with NEC ampacity of 70A. These conductors are inadequately protected by the 80A main breaker in panel AW818-EDS-DP-108C. This is a violation of NEC article 240.21(c) (3).	Reduce trip rating of main breaker in panel EDS-DP-108C (70A maximum) or replace transformer XFMR-108 secondary conductors with larger (#3 minimum) conductors.	Resolved	Breaker was changed to 70A breaker by ECN-723497 Rev 0. Reference: H-14-030002, sh.12, Rev.3

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Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.4	The following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus: Bus Voltage Drops > 8.3% (480V Assumed at Utility Transformer Secondary Bus) Component Name: High Phase Voltage Drop None:	NA	NA	No bus voltage drops exceed ANSI C84.1

Issue #	Short circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

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<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.4</td><td>Where existing protective device coordination could be improved using existing equipment, recommended setting changes are provided and summarized in the following Table.
<table>
<tr><th colspan="11">Circuit Breaker Trip Settings, Summary</th></tr>
<tr><th></th><th colspan="5">Existing Setting</th><th colspan="5">Recommended Setting</th></tr>
<tr><th>Breaker</th><th>LTPU</th><th>LTD</th><th>STPU</th><th>STD</th><th>INST</th><th>LTPU</th><th>LTD</th><th>STPU</th><th>STD</th><th>INST</th></tr>
<tr><td>BKR-100</td><td>1.0</td><td>20</td><td>4</td><td>0.33</td><td>6</td><td>1</td><td>20</td><td>4</td><td>0.33</td><td>12</td></tr>
</table></td><td>Change the instantaneous to 12 max</td><td>Field Work Required</td><td>Need to set breaker 100 to the recommended settings
WDL-110917
Reference:
H-14-030002, Sh.1, Rev.18</td></tr>
<tr><td>8.5.5.2</td><td>The maximum available instantaneous setting will not provide complete short circuit coordination with close-in, high magnitude faults on the feeders downstream of the following MCC-001 feeder breakers: BKR-102, -103, -104, -105, -106, -107, -108, -109, -111, -112, -113, and -115</td><td>Disable the instantaneous trip, if possible. If the instantaneous cannot be disabled, set at maximum (12X). However, the highest available instantaneous setting is insufficient to provide a trip setting greater than the available short circuit current downstream of the feeder breakers, and selectivity may not be achieved for feeder short circuits near the MCC.</td><td>Field Work Required</td><td>Need to verify the breaker settings are consistent with the recommended settings.
WDL-110917
Reference:
H-14-030001, Sh.1 Rev.18
H-14-030001, Sh.2 Rev.11</td></tr>
<tr><td>8.5.5.3</td><td>Breaker BKR-111 is a feeder breaker in MCC-001 upstream of MCC-002 protecting the approximately 350 foot long feeder. The MCC-002 main breaker has no overcurrent trip functions. The maximum available instantaneous setting of BKR-111 will not provide complete short circuit coordination with MCC-002 feeder circuit breakers for high magnitude short circuits on most feeders downstream of MCC-002</td><td>Accept as is</td><td>NA</td><td>Accept as is</td></tr>
</table>

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.5.4	Panel AW273-EDS-DP-108A Main Breaker – The instantaneous trip on the main breaker in panel AW273-EDS-DP-108A (PTW label DP-108A-Main) miscoordinates with the instantaneous trip of the mini mini-power zone primary main breaker BKR-114, and with the instantaneous trip of the branch breaker in panel DP-108A, for high level short circuits on the conductors supplying panel AW273-EDS-DP-108B in the mini power zone	Accept as is	NA	Accept as is
8.5.5.5	Panel AW273-EDS-DP-108A Main Breaker – The instantaneous trip on the main breaker in panel AW273-EDS-DP-108A (PTW label DP-108A-Main) miscoordinates with the instantaneous trip of the mini mini-power zone primary main breaker BKR-114, and with the instantaneous trip of the branch breaker in panel DP-108A, for high level short circuits on the conductors supplying panel AW273-EDS-DP-108B in the mini power zone	Accept as is	NA	Accept as is

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.1	Equipment evaluation based upon load flow current indicates the following non-passing status:	Verify loads on Panel DP-102A and re-assess main breaker rating. Verify loads on Panel DP-102B and re-assess main breaker rating. Verify loads on Panel DP-201A and re-assess main breaker rating.	Resolved	Connected load without application of demand factors exceeds the over current device settings, but is within the device Ampere Interrupting Capacity (AIC). The over current trip is acceptable to facility operation. No action required. References: H-14-030002, sh.1, Rev.18 H-14-030002, sh.3, Rev.10

Device	Status	Comment
	Fail (Applied at > 100% Current Rating)	
BKR-101	X	673A on 600A rating.
BKR-201	X	25A on 20A rating.
DP-102A-MAIN	X	103A on 70A rating
DP-102B-MAIN	X	31A on 30A rating
DP-201A-MAIN	X	62A on 60A rating

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.2</td><td>Design load current (50A) on MCC-001 feeders supplying 30HP supernatant pumps WT-P-008 and WT-P-014 exceeds the ampacity (40A per NEC 310-16 at 60 degrees C) of the #8 conductors. This result would be typical of the other similar supernatant pump motor (WT-P-001, WT-P-017) circuits if they were in service (in this study). NEC FLA for 30 HP motors is 40A. NEC 430-22 requires motor circuit conductors to be rated for 125% FLA = 40 x 1.25 = 50A. Equipment evaluation based upon load flow current indicates the following non-passing status.
<table>
<tr><th>Device</th><th>Status</th><th>Comment</th></tr>
<tr><td></td><td>Fail
(Applied at > 100% Current Rating)</td><td>LF = Load Flow</td></tr>
<tr><td>CBL-DP-102B</td><td>X</td><td>33A on 30A feeder.</td></tr>
<tr><td>CBL-DP-201A</td><td>X</td><td>62A on 55A feeder.</td></tr>
<tr><td>WR19</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR20</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR24</td><td>X</td><td>50A on 40A feeder
See 8.1.2 and 8.6.2.1</td></tr>
<tr><td>WR66</td><td>X</td><td>47A on 40A feeder</td></tr>
</table></td><td>Compliance with NEC 430-22 requires replacement of the conductors with larger (#6 minimum) conductors. See</td><td>Resolved</td><td>This is a duplicate issues described in items 8.1.2 and 8.1.5. By resolving 8.1.2 and 8.1.5 it will resolve issues identified by this item.
1) Pumps AW01A-WT-P-001, AW03A-WT-P-008, AW04A-WT-P-011 have been disconnected per ECN-724186, R.0 and Drawing H-14-030002, sh.1, Rev.17
2) Pump AW06A-WT-P-017 conductors have been changed by ECN-664744, R.0 to show #6 is installed.
3) A walkdown was performed on 10/6/2008 on Pump AW05A-WT-P-014 circuit verified the cable between MCC compartment down the MCC terminal strip is #8 (About 4 feet), and the cable between the MCC terminal strip to the field is #6, the SOW cable going to the pump is also # 6 cable.</td></tr>
<tr><td>8.6.3</td><td>Drawing H-14-030002 Sheet 1 shows the fuse size of fuses in disconnect AW241-EDS-DS-111 as 15A. The field walk down found the fuse sizes to be 1-20A and 1-30A contrary to the drawing. The conductor size was found to be #12 AWG. The 20A fuses were modeled in the report due to the installed installation. There is not enough data available on the load side components to determine the use of 15A vs. 20A fuses. The 30A fuse does not provide the required over current protection for #12 AWG conductors as required by the NEC</td><td>Replace the existing 20A and 30A fuses with 15A fuses in the field to agree with the design and corresponding floodlight fuse installations off of the same circuit</td><td>Resolved</td><td>An electrician verified that 15A fuses are installed on 09/26/2008.
No further action required
Reference:
H-14-030002, Sh.1, Rev.18</td></tr>
</table>

AW TANK FARM

Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
8.7.6	The Arc Flash Evaluation indicates all evaluated fault locations in the 480V-208V systems produce arc flash incident energy values below 1.2 cal/cm^2 (PPE Hazard Class 0) except for the following:	NA	NA	NA

Arc Flash Incident Energy > 1.2 cal/cm^2			
Bus Fault Location	Incident Energy (cal/cm^1.2)	PPE Class	Comment
BUS-BKR-100LD	40.4	Dangerous!!!	2 second max. arc exposure time assumed
BUS-ENCL-100	40.2	Dangerous!!!	2 second max. arc exposure time assumed
BUS-BKR-101	39.8	4	2 second max. arc exposure time assumed
EDS-MCC-001	39.8	4	2 second max. arc exposure time assumed
RCPT-WT-P-017	7.01	2	
BUS-WT-P-017	6.69	2	2 second max. arc exposure time assumed
RCPT-WT-P-001	6.64	2	2 second max. arc exposure time assumed
XFMR-111-SEC	6.61	2	2 second max. arc exposure time assumed
BUS-WT-P-001	6.31	2	2 second max. arc exposure time assumed
BUS-POLE-NP1A	4.43	2	2 second max. arc exposure time assumed
C5662P-PRI	4.41	2	2 second max. arc exposure time assumed
RCPT-WT-P-014	4.27	2	2 second max. arc exposure time assumed
BUS-WT-P-014	4.15	2	2 second max. arc exposure time assumed

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Issue #	Arc Flash Evaluation Study Issues	Recommendations	Status	Comment
	BUS-DP-111 | 3.26 | 1 | Line Side Fault Location | | | DP-111-MAIN | 6.68 | 2 | Note: Assumed maximum arc exposure time is 2 seconds.			
8.7.7	The high arc flash incident energies associated with the first four bus locations in the table above are due to the high long time delay and instantaneous settings of breaker BKR-100. The original trip unit possessed a short time trip function that would allow selective coordination for overloads and low value short circuits as well as reduce trip times and available arc flash energies for high short circuit currents. A replacement trip unit recently installed does not include a short time trip function	Replace trip unit with one possessing short time trip functions	Field Work Required	The currently installed breaker 100, has a trip unit that includes a short timer setting. This setting being set under item 8.5.4. Breaker 101 needs to be replaced with a breaker with a trip unit possessing a short time trip function. Work Package TFC-WO-08-2310 is prepared. An ECN is required. Reference: H-14-030002, Sh.1, Rev.18

8.0 AY TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24468 Rev 0	04/21/2005	5.0.2.8 Build 2	2002	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	6	2	0	4
2	Demand Load Study	1	0	0	1
3	Load Flow and Voltage drop Study	1	0	0	1
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	1	1	0	0
6	Equipment Evaluation Report	2	1	0	1
7	Arc Flash Evaluation Study	0	0	0	0
	Total	11	4	0	7

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Conductors (PTW CBL-DS-101) between disconnect switch F8X696 and disconnect switch DS-I01 are assumed to be #8 AWG to match adjacent conductor sizes. Ampacity of# 8 AWG at 60 deg C is 40A, however, conductor protection is provided by 200A fuses in F8X696.	Verify conductor and fuse size. Re-conductor or change fuse size as required.	Resolved	This cabinet was updated per ECN-725269-R0. This ECN was released in 2/2008 and worked completed in 6/2008. No issues remain. Reference: ECN-725269-R0 H-14-030006, sh.1, Rev.14
8.1.2	Conductor (PTW CBL-DP-105) between transformerXFMR-105 and panel DP-105 is #4 AWG with 60 deg C ampacity of 70A and 75 deg C ampacity of 85A. Downstream main breaker of DP-105 is 100A. The 100A breaker does not provide adequate overcurrent protection for the #4 transformer secondary tap conductors per NEC 240.21 (C).	Decrease main breaker rating to 90A if rated for 75 deg C, 70A if rated for 60 deg C.	Field Work Required	The secondary conductor size is #4 which is good for 70A at 60 deg according to NEC table 310-16. AY241-EDS-DP-105 main breaker needs to be replaced with 70A max to comply with NEC 240-21 (C) There is no immediate hazard since the total AY241-EDS-DP-105 load of 14660W @240VAC=61A which does not exceed the cable rating of 70A but the main breaker need to be replaced to comply with the NEC code. Work package TFC-WO-08-2312 has been assigned. ECN Required. Reference: H-14-030006, sh.1, R. 14 H-14-030006, sh.7, R. 3
8.1.3	Wire run WR362 is a #8 AWG tap conductor originating at TBX-W314-07 and terminating at disconnect switch DS-202 with a 60 deg C ampacity of 40A and a 75 deg C ampacity of50A. Fuses in DS-202 are 45A and do not provide adequate overcurrent protection for the 60 deg C ampacity of the #8 conductors. (Ref. H-2-64347 Sh. 3 Rev 4, H-2-64348	Verify 60A disconnect switch DS-202 is rated for 75 deg C wiring. If not, increase wire size or decrease fuse rating.	Resolved	Contacted Allen-Bradley Manufacturer on 10/8/2008, been informed that the fuse disconnect switch rated for 14 to 4 AWG IEC 947 60 or 75 deg copper wire. In this case using 75deg of NEC table 310-16 the cable is good for 50A. No further action required

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	Sh. 1 Rev 9)			Reference: H-14-030006, Sh.1, Rev.14, H-2-64347 Sh 3, Rev.5 H-2-64348 Sh 1, Rev.10
8.1.4	AY801A-EDS-MCC-001 feeder breaker BKR-152 trip rating is 30A. Downstream conductors (PTW WR319a, WR319b) are #12 AWG with an NEC maximum overcurrent protection limit of 20A. The 30A feeder breaker does not provide adequate overcurrent protection for the #12 conductors. (Ref. H-2-64341 Sh. 1 Rev 8, ECN W314-50·028)	Change BKR-152 to have a 20A trip rating.	Field Work Required	Work package TFC-WO-08-2313 has been submitted to change the breaker. ECN-726043-R0 is being developed. Reference: H-14-030006, Sh.1, Rev.14
8.1.5	AY801A-EDS-MCC-001 feeder breaker BKR-152 trip rating is 30A. Downstream floodlight transformers XFMR-102 and XFMR-103 are 5kVA with primary full load amps (FLAs) of 10.4A. The 30A trip rating ofBKR-152 does not provide adequate transformer primary overcurrent protection per NEC 450.3 (B).	Change BKR-152 to have a 20A trip rating.	Resolved	This is a duplicate of 8.1.4 above. Reference: H-14-030006, Sh.1, Rev.14
8.1.6	Wire run WR363 is a #6 AWG tap conductor originating at TBX-W314-07 and terminating at disconnect switch DS-203 with a 60 deg C ampacity of 55A and a 75 deg C ampacity of 65A. Fuses in DS-203 are 60A and do not provide adequate overcurrent protection for the 60 deg C ampacity of the #6 tap conductors. (Ref. H-2-64347 Sh. 3 Rev 4, H-2-64348 Sh. I Rev 9)	Verify 60A disconnect switch DS-203 is rated for 75 deg C wiring. If not, increase wire size or decrease fuse rating.	Resolved	This is a duplicate of 8.1.3. Contacted Allen-Bradley Manufacturer on 10/8/2008, been informed that the fuse disconnect switch rated for 14 to 4 AWG IEC 947 60 or 75 deg copper wire. In this case using 75deg of NEC table 310-16 the cable is good for 65A No further action required Reference: H-14-030006, Sh.1, Rev.14 H-2-64347 Sh 3, Rev.5 H-2-64348 Sh 1 , Rev.10

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Issue #	Demand Load Issues	Recommendations	Status	Comment
8.2.2	The PTW demand load study indicates a calculated connected load of approximately 315 kVA, a demand load of approximately C6528P/C6529P/C6530P based upon the configuration and operating conditions of the PTW model.		Resolved	Unnecessary loads were physically disconnected to resolve the issue.

Issue #	Load Flow Study Issues	Recommendations	Status	Comment
8.3.4	The voltage drop calculation indicates the following bus voltage drops exceed the ANSI C84.1 limits (8.3% voltage drop) with 480V maintained at the utility transformer secondary bus:	NA	Resolved	Actions were taken to reduce the load, Reference: TE-06-020 R.2, ECN-724335 ECN-723341

Bus Voltage Drops > 8.3%	
(480 Assumed at Utility Transformer Secondary Bus)	
Component Name	High Phase Voltage Drop (%)
BUS-HVAC	9.04
BUS-DP-105	8.77
BUS-DP-103	8.55
BUS-DP-102	8.53

Issue #	Short circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

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<table>
<tr><th>Issue #</th><th>Protective Device Coordination Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.5.4.4</td><td>Although they meet the NEC requirements for overcurrent protection, comparison of the cable thermal damage curve with the time-current characteristics of the upstream protective device indicates the following cables may not be adequately protected from damage due to overloads or short circuits. Cable damage temperature is assumed to be 150 deg. C with an initial operating temperature of75 deg. C. Field verification of cable insulation may be warranted.
<table>
<tr><th>Cable Name</th><th>Reference TCC</th><th>Wire Size</th><th>Protective Device (Upstream)</th><th>Comment</th><th></th><th></th></tr>
<tr><td>CBL-BKR-152LD</td><td>FL-POLE1</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.4</td><td>Duplicate</td></tr>
<tr><td>WR319a</td><td>FL-POLE1</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.4</td><td>Duplicate</td></tr>
<tr><td>WR319b</td><td>FL-POLE2</td><td>12</td><td>BKR-152 C-H, HFD,30A</td><td>Not NEC compliant see 8.1.4</td><td>See 8.1.6</td><td>Duplicate</td></tr>
<tr><td>WR363</td><td>RCPT-203</td><td>6</td><td>BKR-153 C-H, HFD,100A</td><td>see 8.1.6</td><td></td><td>Duplicate</td></tr>
<tr><td>WR323A</td><td>DP-102</td><td>40</td><td>BKR-155 C-H, HFD,250A</td><td>Transformer secondary tap, downstream protection.</td><td>Acceptable</td><td>Resolved</td></tr>
<tr><td>WR322</td><td>RCPT-121</td><td>10</td><td>BKR-157 C-H, HFD,240A</td><td></td><td>New fuse installed 15A</td><td>Resolved</td></tr>
<tr><td>WR361</td><td>RCPT-201</td><td>10</td><td>BKR-160 C-H, HFD,70A</td><td>Tap conductor, downstream protection.</td><td>New 25 Amp Fuse</td><td>Resolved</td></tr>
<tr><td>WR362</td><td>RCPT-202</td><td>8</td><td>BKR-160 C-H, HFD,70A</td><td>Tap conductor, downstream protection.</td><td>New 45 Amp Fuse</td><td>Resolved</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc. purpose and guidelines for basic over current protection philosophy for insulated power cables
IEEE 242-2001 chapter 9 Cable ProtectionH-14-030006, Sh.1.</td></tr>
</table>

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Issue #	Protective Device Coordination Issues							Recommendations	Status	Comment
	WR170	DP-110	4	BKR-163 C-H, HJD, 200A	Tap conductor, downstream protection.	Replace cable with 3/0 or reduce the breaker to 20A	Field Work			
	CBL-CP-202	EF-001	10	BKR-110 C-H, FD, 50A	Motor circuit	Replace breaker to 30A	Field Work			
	CBL-EF-001	EF-001	10	BKR-110 C-H, FD, 50A	Motor circuit		Duplicate			
	CBL-ENCL-201	HTR-003	4	BKR-163 C-H, HJD, 200A	Tap conductor, downstream protection.		Duplicate			
	CBL-ENCL-301	HTR-004	4	BKR-164 C-H, HJD, 200A	Tap conductor, downstream protection.	Replace BKR-164 to 70A trip	Field Work			
	CBL-ENCL-302	EF-002	10	BKR-164 C-H, HJD, 200A	Motor feeder tap.	Duplicate	Duplicate			
	CBL-EF-002	EF-002	10	BKR-113 C-H, FD, 50A	Motor circuit	Change breaker BKR-113 to 30A trip	Field Work			
	WR180	DP-111	4	BKR-164 C-H, HJD, 200A	Tap conductor, downstream protection.	Duplicate	Duplicate			
	CBL-DS-101	DP-105	8	FU-F8X696 BUSS, RES, 200A	See 8.1.1	Duplicate	Duplicate			

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.1</td><td>Protective equipment evaluation based upon load flow current indicates the following protective equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="3">Continuous Current Ratings Exceeded</th></tr>
<tr><th>Component Name</th><th>Rating Exceeded</th><th>Comment</th></tr>
<tr><td>C8X550</td><td>17A on 12A rating</td><td>315 kVA on 225 kVA Transformer Rating</td></tr>
<tr><td>FU-DS-105</td><td>16.6A on 15A rating</td><td>Pole 1 Flood lights</td></tr>
<tr><td>FU-DS-106</td><td>16.8A on 15A rating</td><td>Pole 2 Flood lights</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>This is a duplicate of item 8.1.4
System is lightly loaded according to the meter data (68%) The protective devices will trip (Open) to Protect downstream equipment.
No further action required.</td></tr>
<tr><td>8.6.2</td><td>Non-Protective equipment evaluation based upon load flow current indicates the following equipment is applied beyond its continuous current rating:
<table>
<tr><th colspan="3">Non Protective Device Equipment Evaluation, Load Flow, Failed Equipment</th></tr>
<tr><th>Device</th><th>Criteria Failure</th><th>Comment</th></tr>
<tr><td>CBL-DP-105</td><td>85A > 70A rating</td><td>Review Panel DP-105 loads</td></tr>
<tr><td>C6528-9-30P</td><td>17A > 9.4A rating</td><td>Rating of 225 kVA service transformer exceeded</td></tr>
<tr><td>XFMR-105</td><td>36A > 31.3 rating</td><td>15kVA rating exceeded. Review Panel DP-105 loads</td></tr>
</table></td><td>Verify loads assigned to panel DP-105 as recorded on H-14-030003 Sh. 7 Rev 3. Note that panel schedule loads are given in Watts with no stated power factor. In general, this calculation assumed a power factor of 90%.</td><td>Resolved</td><td>Loads were removed using ECN 722089-R0
Reference
H-14-030006 Sh3</td></tr>
</table>

9.0 AZ 701/702 FACILITIES

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24466 Rev 0	12/9/2005	Version 5.0.3.0 Build 1	2005	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

AZ 701/702 FACILITIES

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.2	There were some voltage drop warnings issued by the PTW Load Flow and Voltage Drop Analysis. The Equipment Evaluation Reports did report some failures based upon voltage drop criteria problems and the 80 percent rule for breaker/cable loading, for more specific information, see Section 9.0 and Appendices D & H.	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

10.0 AZ TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-24465 Rev 0	4/26/2005	5.0.2.8 Build 2	2005	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

AZ TANK FARM

Issue #	Load Flow & voltage Drop Issues	Recommendations	Status	Comment
8.2	There were no 1 PH or 3 PH voltage drop warnings issued by the PTW Load Flow and Voltage Drop Analysis. The Equipment Evaluation Reports did report some failures based upon voltage drop criteria problems and the 80 percent rule for breaker/cable loading, for more specific information, see Section 9.1 and Appendices D & H.	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	Equipment Evaluation was run for both 1 PH and 3 PH. The 1 PH and 3 PH reports show "Base Project" device/equipment failures. The term "Fail" in the Equipment Evaluation Report does not mean the equipment has or is going to fail, but that the equipment failed to pass the NEC/IEEE evaluation guidelines. For more specific information, see Section 9.1 and Appendix H.	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

11.0 C-109 RETRIEVAL PROJECT

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-CALC-32223 Rev 0	04/19/2007	Version 6.0.2.8	2005	ARES Corporation

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	0	0	0	0
2	Demand Load Study	0	0	0	0
3	Load Flow and Voltage drop Study	0	0	0	0
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	0	0	0	0
6	Equipment Evaluation Report	0	0	0	0
7	Arc Flash Evaluation Study	0	0	0	0
	Total	0	0	0	0

C-109 RETRIEVAL PROJECT

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Demand Load Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Load Flow & voltage Drop Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

Issue #	Arc Flash Evaluation Study	Recommendations	Status	Comment
	NA	NA	NA	No Issues Identified

12.0 SY TANK FARM

Document Number	Release Date	SKM/PTW Version	NEC Code	Contractor
RPP-8185 Rev 0	6/24/2004	3.8.1.0 Build 2 4.0.2.6 Build 1	1999	FFS

	Electrical Study Section	Total Issues	Open Issues Requiring Field Work	Open Issues Requiring a Document Change ECN	Issues Resolved
1	NEC Issues	17	8	0	9
2	Demand Load Study	3	0	0	3
3	Load Flow and Voltage drop Study	1	0	0	1
4	Short Circuit Study	0	0	0	0
5	Protective Device Coordination	8	1	0	7
6	Equipment Evaluation Report	4	1	0	3
7	Arc Flash Evaluation Study	0	0	0	0
	Total	33	10	0	23

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.1	Breaker F8X703 - The existing Long Time Pick Up setting (1.0), with a 2000A sensor provides a trip setting of 2000A. This setting does not provide adequate overcurrent protection for the incoming conductors. The incoming conductors are (2) parallel 750 kcmil, with a 75 deg. C ampacity of 950A. NEC 230-90 requires the conductors to be protected from overcurrent with a rating not greater than the conductor ampacity.	As a minimum, lower the LTPU setting to the minimum available value of 0.5. This setting is still 50A above the maximum allowed by the NEC, but is the lowest available setting of the existing equipment. However, this configuration is not in compliance with present code. Options include: replace conductors; replace breaker trip unit with one with lower settings; replace breaker current sensors (CTs); or Facility design authority may seek determination of acceptability.	Resolved	The lower LTPU setting for Breaker F8X703 has been set to the 0.5 value. Reference: WT-O6166
8.1.2	Breaker F8X702 - The existing available settings do not provide overcurrent protection for the upstream incoming conductors as required by NEC 230-90, The 2000A sensor and the 0.5 LTPU setting (1000A) is not adequate to protect the parallel 750 kcmil conductors to their 75 deg C ampacity of 950A.	Existing configuration is not in compliance with present code. Replace conductors, replace breaker trip unit, replace breaker current sensors (CTs), or Facility design authority may seek determination of acceptability.	Field Work Required	Replace the tip unit Current Transformer for breakers F8X702 & 703, and adjust trip settings to a maximum of 625Amp. Then close tie-in breaker 4B. Work Package TFC-WO-08-2316 has been initiated. ECN Required Reference: H-2-46424, Sh.1, R.11
8.1.3	Fuse (20A) in starter for EX-C-1 is much larger than required by the load, and is a violation of NEC 430-52	Replace fuse with 7.5A (max) time delay (preferred), or 9A (max) non-time delay fuse.	Field Work Required	Replace the fuse with one that has a rating not exceeding the value given in the NEC Table 430.52. The full load amp (FLA) for 1 ½ motor, 3-Phase, 480 VAC is 3.0A (NEC Table430-250. The percentage of full load current is 300% (3.0A X 300%=9.0A) for non-time delay fuse and 175% (3.0A X 175%= 5.25A, next fuse size up to 7.5A) for a time-delay fuse. Work Package Required ECN Required Reference: H-2-46424, Sh.2, Rev.9 NEC Table 430.52

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.4.	Secondary conductors on transformer SY241-EDS-XFMR-102 do not posses overcurrent protection required by NEC 240-21 (c), The sum of the downstream overcurrent devices (100A fuses in SY241-EDS-DS-130 and 70A fuses in SY-EDS-DS-131) exceeds the ampacity (150A) of the secondary conductors (wire run HMS-15)	Install larger secondary conductors, or decrease the sum of the downstream fuse ratings to 150A or less. (See paragraph 8.1.5 below)	Field Work Required	Breaker SY272-EDS-BKR-117 has been opened to de-energize the Data Acquisition & Control System (DACS) Trailer. An ECN has been prepared to lift the leads at load side of breaker SY272-EDS-BKR-117 Work package Number TFC-WO-08-2316 has been submitted to perform this work Reference: H-14-030031, sh.3, Rev.9 H-14-030031, Sh.27, Rev.1
8.1.5	Fuses in disconnect switch SY241-EDS-DS-131 supplying SY461-VT-HVAC-3 do not provide required overcurrent protection of downstream conductors (wire run HMS-17). Installed fuses are 70A, cable ampacity is 55A @ 60 deg C	Reduce the rating of the fuses to 55A or less	Resolved	This item is addressed by item 8.1.4 above Reference: H-14-030031, sh.3, Rev.9
8.1.6	Cable HMS-107 is not adequately protected from overcurrent by the 200A rating of the upstream breaker BKR-129 in MCC-003. Ampacity of the *1/0* conductors is 150A @ 75 deg. C	Replace BKR-129 with one of lower current (trip) rating, 150A or less	Field Work Required	Reduced the load by de-energizing the SHIMs cabinets and determined that the connect load does not exceed the ampacity of the HMS-1207 conductor. Work package TFC-WO-08-2317 has been submitted ECN Required Reference: H-14-030031, sh.4, Rev.2 H-14-030031, sh.20, Rev.4 H-14-030031, sh.21, Rev.2
8.1.7	Cable HMS-19 on secondary of transformer EDS-XFMR-105 does not have overcurrent protection required by NEC 240-21 (c). Cable ampacity is 310A @ 75 deg. C. The sum of the overcurrent ratings of the devices downstream (EDS-DS-142, -149, & -150) is 480A	Increase size of HMS-19 conductors, or decrease the sum of the ratings of the downstream overcurrent devices. (See paragraph 8.1.8)	Resolved	This issue is addressed by 8.16. Above.

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.8	Cable HMS-19C supplying disconnect switch EDS~DS-150 is not adequately protected from overcurrent as required by NEC 240-21 (b) (1) (a). The cable ampacity is 70A, and terminates at the disconnect switch containing 80A fuses. The 80A fuses do not provide the required overcurrent protection.	Replace the fuses with ones of lower rating, 70A or less	Resolved	The fuse was changed from 80A to 40A to comply with the NEC code. No further action required Reference: ECN-722997, R.0.. H-14-030031, sh.4, Rev.2 H-14-030031, sh.4, R.2
8.1.9	Primary conductors on transformer SY276-EDS-XFMR-106 supplying panel EDS-DP-116 are not adequately protected from overcurrent by upstream devices as required by NEC 240-3. Conductor ampacity is 40A. Upstream disconnect switch EDS-DS-152 contains 60A fuses.	Replace the 60A fuses with 40A fuses	Resolved	This issue is addressed by 8.1.4 above. Reference: H-14-030031, sh.5, Rev.6
8.1.10	Transformer SY241-EDS-XFMR-107 does not have overcurrent protection as required by NEC 450-3(b). Secondary protection is required unless primary protection is provided at 125% transformer FLA or less. Primary protection is greater than 125% FLA, therefore 125% maximum secondary overcurrent protection is required. Transformer FLA is 31A. 125% FLA is 39A. The only existing secondary overcurrent device is the 80A main breaker in panel SY241-EDS-DP-118. Existing secondary overcurrent protection exceeds the maximum allowed.	Install lower rated (40A or less) main breaker in panel EDS-DP-118. (See 8.1.11 below)	Field Work Required	The main breaker in DP-118 should be replaced with 40A breaker to comply with the NEC code 450-3(b). ECN-726117-R0 is being developed Work Package TRC-WO-08-2318 has been submitted to replace the breaker. Reference: H-14-030031, sh.5

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.11	Breaker F8X703 – The existing Long Time Pick Up setting (1.0) with a 2000 A sensor, provides a trip setting of 2000A. This setting does not provide adequate overcurrent protection for the incoming conductors. The incoming conductors are (2) parallel 750 kcmil, with a 75 deg C ampacity of 950A. NEC 230.90 requires the conductors to be protected from overcurrent with a rating not greater than the conductor ampacity.	As a minimum lower the LTPU setting to the minimum available value of 0.5. This setting is still 50A above the maximum allowed by the NEC, but is the lowest available setting of the existing equipment. However this configuration is not in compliance with present code. Options include: replace breaker trip unit with one with lower settings; replace breaker current sensors (CTs); or Facility design authority may seek determination of acceptability.	Resolved	This issue is addressed by 8.1.10.
8.1.12	Secondary conductors on transformer EDS-XFMR-107 supplying panel EDS-DP-118 are not provided adequate overcurrent protection required by NEC 240-21 (c). Ampacity of secondary conductors is 70A. Downstream overcurrent device is 80A main breaker in panel EDS-DP-118. The 80A main breaker does not provide the required (70A or less) overcurrent protection	Install lower rated (70A or less) main breaker in panel EDS-DP-118.	Resolved	This issue is addressed by 8.1.10. Install a 40A main breaker in panel SY241-EDS-DP-118.
8.1.1.3	Cable HMS-24 is not adequately protected from overcurrent by upstream devices as required by NEC 240-3. Cable ampacity is 40A. Upstream overcurrent device(s) are 50A fuses in disconnect switch EDS-DS-146	Replace 50A fuses with 40A (or less) fuses	Resolved	This issue is addressed by 8.1.6. This circuit feeds SHIMS Cabinet SY103-SHM-PNL-005. This equipment have been de-energized. Reference: H-14-030031, sh.4, Rev.2

SY TANK FARM

Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.14	Primary conductors on 50kVA transformer 242-S- T-1 are not adequately protected against overcurrent by upstream breaker in MCC-E-001 cubicle 01, based upon the assumption of paragraph 6.4 above, and NEC 240-3. The ampacity of the AWG #1 cable is 110A @ 60 deg. C. Upstream circuit breaker is a 150A frame, with 125A trip rating. While the 150 frame circuit breaker may allow use of the #1 cable at its 75 deg. C ampacity (130A), it is assumed by this study that the 50 kVA transformer (60 FLA) dictates use of the 60 deg. C conductor rating	Verify transformer primary connections are rated for use with 75 deg. C wire, or replace the 125A trip circuit breaker with a breaker rated at 110A or less	Field Work Required	Verify transformer primary connection lugs are rated for use with 75 deg. C wire, or replace the 125A trip circuit breaker with a breaker rated at 110A or less ECN Required Work Package Required Reference: H-2-46424, Sh.4, Rev.14.
8.1.15	Primary conductors on 50kVA single phase transformer EDS-XFMR-100 are not adequately protected against overcurrent by upstream breaker BKR-104 in EDS-MCC-001 cubicle B4, as required by NEC 240-3. The ampacity of the AWG #2 cable is 95A @ 60 deg. C. Upstream circuit breaker is a 150A frame, with 125A trip rating.	Replace the 125A trip circuit breaker with a breaker rated at 100A or les	Field Work Required	The cable between XFMR-100 and BKR-104 is size #2 which is good according table 310-16 to 95A @ 60 deg. The upstream breaker is 125AT. The cable is not protected. There is no immediate hazard since the SHIMS panel SY102-SHM-PNL-005 is OFF. Removal the SHIMS panel load it will bring the total connected load to less the maximum current for the cable. ECN Required) Work Package: TFC_WO-08-2319 has been submitted to replace the breaker. Reference: H-14-030031, Sh.1, Rev.13

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Issue #	National Electric Code (NEC) Issues	Recommendations	Status	Comment
8.1.16	Calculated Connected Load, and Demand Load (6.5 kVA) on transformer EDS-XFMR·101 supplying panel EDS-DP-105 exceeds the 5 kVA rating of the transformer. However, no conductors are overloaded	Verify circuit loads given in panel schedule. Identify any operational constraints or interlocks that will allow consideration of non-coincidental loads. Assess need for larger transformer. Recognize that upstream primary transformer protection (10A fuse in disconnect DS-125) provides overcurrent protection at less than 100% of transformer's rated full/load current	Resolved	The drawing was updated to the current field condition under ECN-726036-R0. This resolves the issue no further action required. Reference: H-14-030031 sh 12
8.1.17	Conductors (#4 AWG) supplying 50HP motor K1-5-3 from MCC-E-001 cubicle C5 have an ampacity of 70A. NEC 430-22 requires motor conductors with ampacity of 125% motor FLA. 50HP motor FLA(65Ax1.25=81A is 81A. Conductors are inadequately sized for the load	Increase size of motor branch circuit conductors	Field Work Required	K1 is the primary exhaust fan for 242-S. Work Package TFC-W-08-0456 has been submitted to determine and correct the K-1 fan motor pigtail wire size and type. Reference: H-14-46424, Sh.3, R.11,

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Issue #	Demand Load Issues	Recommendations	Status	Comment
8.2.1	The demand load study for transformer C6647P indicates a calculated demand load of approximately 1210 kVA, based upon the PTW model Actual electric utility meter data for the last 2 years (Ref. Appendix U) indicates: an average consumption of 87 kW; a (monthly average) demand of 269 kW; and a maximum demand of 569 kW. Assuming a 90% power factor, these equate to 97 kVA; 299 kVA; and 632 kVA respectively. The metered (averaged) demand load is approximately 25% of the PTW calculated demand load.	NA	Resolved	This issue is resolved by issue number:8.1.2
8.2.2	The demand load study for transformer C6648P indicates a calculated demand load of approximately 340 kVA, based upon the PTW model. Actual electric utility meter data for the last 2 years (Ref. Appendix U) indicates: an average consumption of 40 kW; a (monthly average) demand of 70 kW; and a maximum demand of 119 kW. Assuming a 90% power factor, these equate to 44 kVA; 78 kVA; and 132 kVA respectively. The metered (Averaged) demand load is approximately 23% of the PTW calculated demand load.	NA	Resolved	This issue is resolved by issue number:8.1.2
8.2.3	Actual total metered (averaged) demand load (299 + 78 =377 kVA) for the tank farm is approximately 24% of the total demand load (1210 + 340 =1550 kVA) calculated from the PTW mode/(s) in this study. Note that the PTW calculated demand load includes the 498 kW Flush Tank Heater HTR-302C-2.	NA	Resolved	This issue is resolved by issue number:8.1.2

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<table>
<tr><th>Issue #</th><th>Load Flow & Voltage Drop Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.3.1</td><td>PTW load flow and voltage drop output reports (for Case 1) are located in Appendices C, K, and N, Appendix C and K contain output reports for PTW Version 3.8 and 4.0 balanced load flow and voltage drop study. Appendix N contains output report for the Version 4.0 unbalanced study.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.2</td><td>Guidelines (NEC 21 0-19(a) FPN No.4 and 215-2(d) FPN No.2) for allowable load flow voltage drop are 3% in a feeder, and 5% total at furthest downstream bus (equipment location). These voltage drops do not include voltage drops due to utility system and service transformer impedances.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.3</td><td>For this study, the voltage drop at the secondary of the service transformers will be subtracted from the associated total bus voltage drops to determine acceptance of the voltage drops of the distribution system downstream of the service transformers. PTW calculated voltage drops for the service transformers are approximately 2.2% for TXEE-002 serving SWG-E-001 Bus #1 with a secondary bus voltage drop of approximately 1.1 %; and 5.0% for TX-E-001 serving SWG-E-001 Bus #2 with a secondary bus voltage drop of 3.9%.</td><td></td><td>NA</td><td></td></tr>
<tr><td>8.3.3.1</td><td>Load flow voltage drop studies performed by PTW 3.8.1.0 and 4.0, (ignoring the voltage drop(s) up stream of the secondary of the service transformer) indicate the following violations of the above voltage drop guidelines:
<table>
<tr><th colspan="4">Load Flow Voltage Drop Excursions > 5% for Bus, 3% for Branch</th></tr>
<tr><th>PTW Bus Name</th><th>LFVD (%) Bus</th><th>LFVD (%) System Net (Neglect 13.8kV System)</th><th>Comments</th></tr>
<tr><td>XFMR-106-SEC</td><td>6.03</td><td>5.43</td><td rowspan="7">Load flow associated with loads assigned to EDS-DP-116</td></tr>
<tr><td>BUS-ATS-101</td><td>6.18</td><td>5.58</td></tr>
<tr><td>BUS-DS-153</td><td>6.26</td><td>5.66</td></tr>
<tr><td>BUS-EDS-DP-116</td><td>6.3</td><td>5.7</td></tr>
<tr><td>BUS-UPS-100</td><td>6.45</td><td>5.85</td></tr>
<tr><td>BUS-DP-115</td><td>6.49</td><td>5.89</td></tr>
<tr><td>BUS-DS-155</td><td>6.51</td><td>5.91</td></tr>
</table></td><td></td><td>Resolved</td><td>As noted in issue 8.3.4, the measured loads for this facility are between 23 and 25% of the connected loads There are no changes planned to either the facility or its operation that will increase the electrical load.
No Action Required.</td></tr>
</table>

SY TANK FARM

Issue #	Load Flow & Voltage Drop Issues				Recommendations	Status	Comment
	BUS-HVAC-102	6.41	5.81				
	BUS-DP-119	6.89	6.29				
	BUS-TRLR-PNL	10.32	6.43	Load flows associated with assumed load on Change Trailer.			
	CHNG-TRLR-SEC	10.09	6.2				
	BUS-DP-112	11.8 (A Ph)	Approx 10	Load flows associated with EDS-DP-112.			
	BUS-DS-141	11.5 (A Ph)	Approx 10				
	BUS-DS-140	9.6 (A Ph)	Approx 8				
	BUS-DS-137	9.6 (A Ph)	Approx 8	241-SHM-PNL-005 Feeder			
	BUS-241PNL-005	10.9 (A Ph)	Approx 9				
	BUS-DS-138	9.6	Approx 8	01A-SHM-PNL-005 Feeder			
	BUS-01APNL-005	10.3 (A Ph)	Approx 9				
	BUS-DS-139	9.6 (A Ph)	Approx 8	WST-ENCL-103 Feeder			
	BUS-ENCL-103	9.7 (A Ph)	Approx 8				
	PTW Branch Name	LFVD (%) Branch					
	EDS-XFMR-106	4.23					
	XFMR-CHNG-TRLR	3.79		Load flows associated with assumed load on Change Trailer			
	CBL-DP101CKT10	7.0 (A Ph)					
	CBL-DP1 01 CKT5	5.5 (A Ph)					
	CBL-DP101CKT9	4.5 (A Ph)					
	HMS-20	3.8 (A & B Ph)					
	HMS-6	3.6 (A & C Ph)					
	WR-1	3.2 (A & C Ph)					
	WR-2	3.6 (A & C Ph)					

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Issue #	Load Flow & Voltage Drop Issues	Recommendations	Status	Comment
8.3.3	Four of the above noted load flow voltage drop excursions are associated with the loads assumed for the change trailer served by Welding Outlet 1. With no other load information available, the PTW model assumes the 25 kVA transformer supplying the change trailer is fully loaded, resulting in load currents that may be greater than actual		NA	
8.3.4	Note that voltage drop is a function of load flow current, and that metered total (demand) load is approximately 23% and 25% of calculated demand load (based upon loading assumptions of this study) for SWG-E-001 Bus #1 and Bus #2 respectively. Based upon the metered demand load, load flow voltage drops will be significantly less than those calculated by this study model.		NA	

Issue #	Short Circuit Study Issues	Recommendations	Status	Comment
8.4.1	Short circuit study output reports are located in Appendices D, L, and O.	NA	NA	
8.4.2	Calculated available short circuit currents at SWG-E-001 Bus #1 were found to be approximately 11 kA for 3phase, and single-line-to-ground. Short circuit currents were reduced to below 9kA at downstream bus EDSMCC-003.	NA	NA	
8.4.3	Calculated available short circuit currents at SWG·E-001 Bus #2 were found to be approximately 12 kA for 3phase, and single-line-to-ground. Short circuit currents were reduced to below 10 kA at downstream bussesMCC·E-001, EDS-MCC-001, and Power Panelboard D.	NA	NA	

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.1	Time Current Curves for protective devices are located in Appendix E (from PTW 3.8.1.0) and Appendix P (from PTW 4.0).	NA	NA	
8.5.2	Existing and Recommended protective device settings are provided in Appendix F (PTW 3.8.1.0) and Q (PTW 4.0).	NA	NA	
8.5.3	Most of the circuit breakers in the 241SY Farm associated with this study have fixed trip settings. Some of the Larger thermal-magnetic breakers with fixed long-time trips may have adjustable instantaneous settings.	NA	NA	
8.5.4	Where existing protective device coordination could be improved using existing equipment, recommended setting Changes are provided and summarized in the following Table.	NA	NA	
8.5.5	Specific coordination issues are discussed below:	NA	NA	
8.5.5.1	General - Circuit breakers with instantaneous trip characteristics with no intentional delay may not achieve selective coordination with other nearby instantaneous trip devices. This situation is commonly found at a panel or motor control center with thermal-magnetic main and feeder circuit breakers. Short circuits on the feeders with sufficient available fault current may trip the main breaker. This situation is found in the system of this study at EDS-MCC-003-A / EDS-MCC-003-B and main breaker BKR-113; DP-108; EDS-MCC-001 and main breaker BKR- 112; EDS-MCC-002 and upstream manual transfer switch MTS-100; for very high level short circuits close to MCC-E-001: and DP-116.	NA	NA	
8.5.5.2	Breaker F8X703 - The existing ground fault delay settings do not selectively coordinate with downstream	Recommendation: Increase F8X703 Ground Fault Delay	Resolved See 8.1.1	See 8.1.1

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
	feeder Breakers (BKR'2A, BKR-2B, BKR-2C, BKR-2D, BKR-3B).	to 0.25 seconds, and set feeder breaker(s) Ground Fault Delay to 0.10 seconds.		
8.5.5.3	Breaker F8X703 - The existing instantaneous setting does not coordinate with several downstream circuit breakers (See discussion in 8.5.5.1 above).	Increase F8X703 instantaneous setting to 12. This will provide selective tripping for short circuits on switchgear feeders, but will sacrifice fast tripping of the main for Switchgear bus faults and backup protection. Due to the falloff of available short circuit current, the "12" setting will effectively disable the instantaneous trip function for all but high magnitude (close) short circuits.	Resolved See 8.1.1	See 8.1.1
8.5.5.4	Breaker F8X702 - The Long Time Pickup and Long Time Delay settings of F8X702 and those of breaker BKR-6C do not provide selective coordination for overloads and short circuits. Pickup of main breaker F8X702 is presently set at 1000A. Pick up of BKR-6C is presently 960A. Additionally, the LTD curves are nearly identical. The maximum allowed LTPU setting of F8X702 is dictated by the NEC overcurrent protection requirements for the incoming conductors, and should not exceed 950A.	As a minimum, increase the LTD setting of F8X702 from 3.5 to 6. If the load requirements of the feeder will allow, decreasing the LTPU of BKR-6C will provide increased selectivity with F8X702 for low overloads.	Resolved See 8.1.1	See 8.1.1
8.5.5.5	Fuses CATH-DS-100 and CATH-D8-101 - These fuses are rated with a 30A trip. They are supplied by a common 20A circuit breaker (#23) in panel DP-108. The 20A circuit breaker will likely trip before either fuse in response to an overload or short circuit downstream of the fuses.	Accept as is.	Resolved	Accept as is.

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Issue #	Protective Device Coordination Issues	Recommendations	Status	Comment
8.5.5.6	Panel DP-E-002 - Electronic displays on main and feeder breakers in this panel were inoperable at the time of the field walk down, hence, trip settings could not be determined/verified. Recommended settings are provided, based upon information given on one line drawings, cable ampacities, and consideration of selective coordination.		Field Work Required	Work Package TFC-WO-08-2367 has been submitted to repair the displays.
8.5.5.7	BKR-B4 - The 1000A rating of MCC-E-001 main breaker BKR-B4 does not provide selective coordination with upstream breaker DP-E-002-Ckt1 (600A), nor the main breaker of panel DP-E-002 (1000A). However, BKR-B4 and DP-E-002-Ckt1 are in series in the dedicated incoming feeder to MCC-E-001, and the lack of selectivity between the breakers on the feeder may be tolerable (due to the sizing and trip values for the breakers). Additionally, the feeder breaker DP-E·002Ckt1 should isolate the panel main breaker from tripping due to feeder overloads.	Accept as is.	Resolved	Accept as is.
8.5.5.8	Panel EDS-DP-113 - There is little if any selective coordination between the overcurrent protective devices upstream of panel DP-113 to motor control center EDS-MCC·003-B. Short circuits on or downstream of panel DP-113 may trip the feeder breaker BKR-129 at the MCC. Overloads at the panel may trip any of several upstream devices.	NA	Resolved	Accept as is.
8.5.5.9	Fuse (20A) in starter for EX-C-1 does not coordinate with upstream branch breaker BKR-D2 in Panelboard D. Also, the 20A fuse is much larger than required by the load, and is a violation of NEC 430-52.	Replace fuse with 7.5A (max) time delay (preferred), or 9A (max) non-time delay fuse.	Resolved	This issue addressed by 8.1.3

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<table>
<tr><th>Issue #</th><th>Equipment Evaluation Issues</th><th>Recommendations</th><th>Status</th><th>Comment</th></tr>
<tr><td>8.6.1</td><td>Equipment evaluation output reports based upon short circuit ratings are located in Appendices G1 from PTW 3.8.1.0, and R1 from PTW 4.0.</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.1.1</td><td>No equipment was noted to be applied outside its short circuit ratings.</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.2</td><td>Equipment evaluation (feeders and transformers) based upon current rating and load flow current is presented in Appendices G2 and R2. Warnings noted by these reports include the following:</td><td>NA</td><td>NA</td><td></td></tr>
<tr><td>8.6.2.1</td><td>The following feeders were noted to be applied beyond their ampacity ratings:
<table>
<tr><th>Branch</th><th>Design Load (A)</th><th>Ampacity (A)</th><th>Comment</th></tr>
<tr><td>CBL-ATS-101-LD</td><td>97</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>CBL-DS-153</td><td>98</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>CBL-XFMR-106-S</td><td>98</td><td>95</td><td>Supplies EDS-DP-116.</td></tr>
<tr><td>WR-E003, E004</td><td>1737</td><td>950</td><td>Service Lateral supplying SGR-E-001 Bus #2</td></tr>
<tr><td>CBL-XFMR-106-P</td><td>42</td><td>40</td><td>EDS-XFMR-106 primary supply.</td></tr>
<tr><td>CBL-E-001-C5</td><td>81</td><td>70</td><td>K1-5-3 motor feeder. NEC violation. 125% x 65 FLA = 81A</td></tr>
<tr><td>HMS-117</td><td>69</td><td>55</td><td>Supplies VT-HVAC-3. PTW load assumed. Investigate and determine installed load.</td></tr>
<tr><td>CBL-HVAC-103</td><td>69</td><td>55</td><td>Supplies VT-HVAC-103. PTW load assumed. Investigate and determine installed load.</td></tr>
<tr><td>WR-FT104,FT105</td><td>749</td><td>620</td><td>Supplies HTR-302C-2</td></tr>
</table></td><td>NA</td><td>Resolved</td><td>A field walkdown and inspection was performed and determined that conductor insulation in all circuits is rated for 90 deg. C and wire sizing was consistent with recommended ampacities per NEC 2008 table 310.16.
There was no indication of excessive heat or discoloration on the wire insulation or terminations.
Annual preventive maintenance is performed on the Motor Control Center (MCC) that provides power for these branch circuits. This preventive maintenance program performs a check of the tightness of all connection along with a visual inspection of each of the individual conductors for signs of deterioration, heat, discoloration of conductors.
Reference:
SKM System Analysis Inc. purpose and guidelines for basic over current protection philosophy for insulated power cables
IEEE 242-2001 chapter 9 Cable Protection
H-14-030031, Series</td></tr>
</table>

SY TANK FARM

Issue #	Equipment Evaluation Issues	Recommendations	Status	Comment
8.6.2.2	Calculated demand load on service transformer C6647P is approximately 250% of transformer rating.	NA	Resolved	This issue is addressed by issue number 8.1.2. The transformer demands will be reduced to 625A by the actions taken in 8.1.2.
8.6.2.3	Calculated demand load on transformer XFMR-101 is approximately 158% of transformer rating.	NA	Resolved	Walk down performed Document Change ECN726036-R0 was released to update the drawings. Reference: H-14-030031 Series
8.6.2.4	Calculated demand load on transformer XFMR-106 is approximately 108% of transformer rating.	NA	Field Work	Walk down was performed and determined that demand load on the transformer is 75%No further action required. Reference: H-14-0300031 Sh23 H-14-0300031 Sh 5

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Issue #	Equipment Evaluation Issues Special case 2	Recommendations	Status	Comment
9.1	Case 2 assumes all SWG-E-001 loads (Bus 1 & 2) are served by a single incoming line and associated transformer. Incoming line breaker 1B and bus tie breaker 4B are closed. Incoming line breaker 78 is open.	NA	NA	NA
9.2	Analysis is limited to load flow and voltage drop, and device evaluation based upon load flow.	NA	NA	NA
9.3	Calculation output reports for Case 2 are contained in appendices M through FF, with a summary and comparison of balanced three phase branch currents and voltage drops in appendix FF.	NA	NA	NA
9.4	The impacts to balanced branch load flows and bus voltage drops of the Case 2 configuration is summarized in Appendix FF. Downstream of the switchgear SWG-E-001, there were no significant changes in load flow. The largest included a 16A increase in the feeder supplying EDS-MCC-003-A and , and a 16A decrease in the current drawn by 498kW heater HTR-302C-2. Calculated overall total (balanced) load current decreased by nearly 20A(@480V). The significant impact of shifting the entire system load onto one incoming line and service.	NA	NA	NA

Issue #	Arc Flash Evaluation Issues	Recommendations	Status	Comment
	NA	NA	NA	NA

Task# WRPS-PER-2008-0167.40

E-STARS[R] Report
Task Detail Report
07/08/2009 1038

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.40		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN in support of Work Package TFC-WO-08-2316 (to remove power from DACS Trailer) is released. Deliverable: Electro		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0167	**Due**	05/13/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/31/2008 1146	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Inactive
	Ensure ECN in support of Work Package TFC-WO-08-2316 (to remove power from DACS Trailer) is released. Deliverable: Electronic copy of released ECN. Reference: Issue 8.1.4 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 04/09/2009 1235 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/09/2009 1603 *Instructions:*	

ATTACHMENTS	
Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.40 CLOSURE ECN-726166-R0.pdf

COMMENTS	
Poster	Nelson, Rick E (Bragg, David A) - 04/09/2009 1235
	Completed
	The required action was completed with the release of ECN-726166-R0 which provides the configuration changes required to isolate power to the SY Farm DACS Trailer. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.
Poster	Knight, Mark A (Bragg, David A) - 04/09/2009 1603

Task# WRPS-PER-2008-0167.40

	Concur		
	The required action was completed with the release of ECN-726166-R0. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.		
Poster	^PER CAs (Owen, Annette) - 04/09/2009 2036		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	05/13/2009 0000
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

S

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726166 R 0

1b. Proj. ECN - - R

2. Simple Modification	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date
☒ Yes ☐ No			2-26-09
5. Originator's Name, Organization, MSIN, & Phone No. Jerry Wilk / Areva FS / WRPS, MSIN S5-07, 373-0647	6. PrHA Number No. 00706 R - 0 ☐ N/A	7. USQ Number No. TF - 09 - 0452 - D R - 0 ☐ N/A	8. Related ECNs N/A
9. Title SY Farm DACS Trailer Electrical Power Disconnection	10. Bldg. / Facility No. 241-SY-272	11. Equipment / Component ID SY272-EDS-MCC-003	12. Approval Designator N/A
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) See Block 18		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number TFC-WO-08-2316	16b. Modification Work Completed Responsible Engineer / Date	16c. Restored to Original Status (TM) N/A Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

H-14-030031 Sh. 3 Rev. 9 H-14-030031 Sh. 5 Rev. 6 H-14-030031 Sh. 22 Rev. 0 H-14-030031 Sh. 23 Rev. 2
H-14-030031 Sh. 26 Rev. 1 H-14-030031 Sh. 27 Rev. 1 H-14-030631 Sh. 3 Rev. 3 H-2-822862 Sh. 1 Rev. 1

Problem: The DACS system housed in Trailer MO-461 is no longer required. The SY Tank Farm DACS was designed to control operation of the Tank 241-SY-101 mitigation mixer pump. Operation of the mixer pump is no longer required. The DACS is primarily a computer-based system that collects, interprets, and displays data, along with annunciating alarms. The DACS facilities and components currently are not being used.

Solution: Disconnect 480 VAC 3 phase power from the MCC supply circuit breakers to begin the process of physical removal of the DACS trailer along with its control and monitoring systems and associated UPS trailer. Future ECNs may be issued to disconnect instrumentation wiring and their associated raceways if it is deemed desirable.

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

DACS Trailer MO-461 is no longer in service, and power must be isolated. In preparation for possible removal of trailer at a later date, electrical supply to the trailer is to be disconnected at its source (SY272-EDS-MCC-003). This action will also remove an NEC violation as found during the 241-SY Tank Farm Electrical Distribution System Study (RPP-8185, R0) Conclusion 8.1.4. "Secondary conductors on transformer EDS-XFMR-102 do not possess overcurrent protection required by NEC 240-21 (c). The sum of the downstream overcurrent devices (100A fuses in SY-EDS-DS-130 and 70A fuses in SY-EDS-DS-131) exceeds the ampacity (150A) of the secondary conductors (HMS-15)."

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
DT Heimberger	S5-27	GJ Coleman	S7-24
RE Nelson	S5-07		
CF Myott	S7-70		
MA Roberts	S5-07		
JL Wilk	S5-07		
JW Ficklin	S7-83		
LJ Hebert	S5-07		

Release Stamp

MAR 24 2009
DATE:
STA: 4
HANFORD RELEASE
ID: 58

ENGINEERING CHANGE NOTICE	1a. ECN 726166 R 0
Page 2 of 12 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN - - R

22. **Revisions Planned** (Include a brief description of the contents of each revision)

None.

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. **Commercial Grade Item Dedication Numbers** (associated with this design change)

N/A

24. **Engineering Data Transmittal Numbers** (associated with this design change, e.g., new drawings, new documents)

N/A

25. **Other Non Engineering (not in HDCS) documents that need to be modified due to this change**

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	N/A		
Operations Procedure	N/A		
Maintenance Procedure	N/A		
N/A			

26. **Field Change Notice(s) Used?**

☐ **Yes** ☒ **No**

If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. **Design Verification Required?**

☐ **Yes** ☒ **No**

If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. **Approvals**

Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	JL Wilk	3/24/09	Originator/Design Agent		
Resp. Manager	MA Roberts	3/24/2009	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	RE Nelson	3/24/09	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

Document/Drawing No. N/A Sheet N/A Revision N/A

Block 18, Description of Change Continued:

Summary of Changes:

H-14-030031 Sh. 3 Rev. 9: Disconnect cable HMS-108 from BKR-117 in bin 3FA of SY272-EDS-MCC-003, make safe, and mark as TAGGED "OUT OF SERVICE".

H-14-030031 Sh. 5 Rev. 6: Disconnect cable HMS-102 from BKR-130 in bin 7FD of SY272-EDS-MCC-003, make safe, and mark as TAGGED "OUT OF SERVICE".

H-14-030031 Sh. 22 Rev. 0: Add flag note to panelboard schedule stating that connections from SY272-EDS-MCC-003 compartment 7FD circuit breaker BKR-130 have been de-terminated thereby eliminating 120/208 VAC single phase power to panelboard. In panelboard heading under "Voltage" remove reference to 240 and replace with 208.

H-14-030031 Sh. 23 Rev. 2: Add flag note to panelboard schedule stating that connections from SY272-EDS-MCC-003 compartment 7FD circuit breaker BKR-130 have been de-terminated thereby eliminating 208Y/120 VAC, three phase power to panelboard.

H-14-030031 Sh. 26 Rev. 1: Add flag note to panelboard schedule stating that connections from SY272-EDS-MCC-003 compartment 3FA circuit breaker BKR-117 have been de-terminated thereby eliminating 120 VAC single phase power to panelboard.

H-14-030031 Sh. 27 Rev. 1: Add flag note to panelboard schedule stating that connections from SY272-EDS-MCC-003 compartment 3FA circuit breaker BKR-117 have been de-terminated thereby eliminating 208Y/120 VAC three phase power to panelboard.

H-14-030631 Sh. 3 Rev. 3: Add flag note next to panelboard SY276-EDS-DP-116 stating that connections from SY272-EDS-MCC-003 compartment 7FD circuit breaker BKR-130 have been de-terminated thereby eliminating 208Y/120 VAC, three phase power to panelboard.

H-2-822862 Sh. 1 Rev. 1: Add flag note next to panelboards SY461-EDS-DP-119 (PNLBD "A") and SY461-EDS-DP-120 (PNLBD "B") stating that connections from SY272-EDS-MCC-003 compartment 3FA circuit breaker BKR-117 have been de-terminated thereby eliminating electrical power to panelboards.

Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

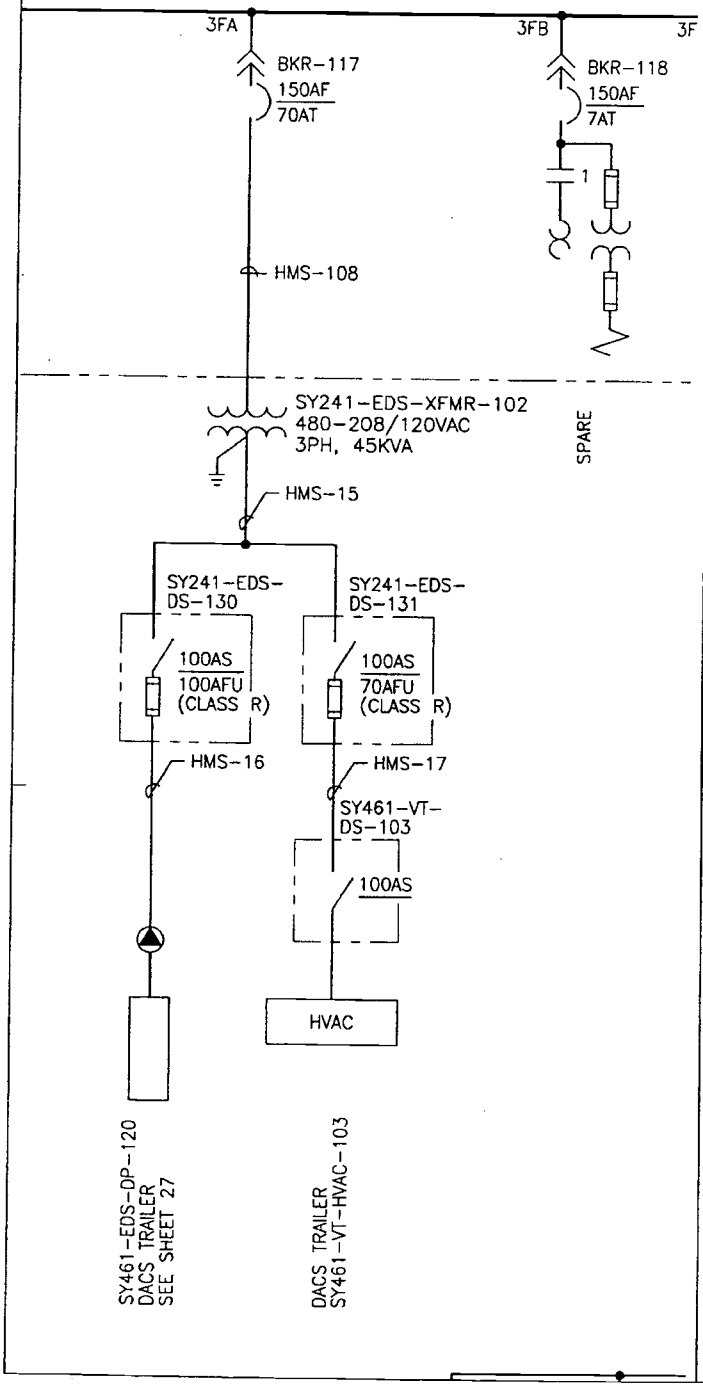
WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 4 of 12 DM☐ FM☒ TM☐	1a. ECN 726166 R 0 1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 3 Revision 9

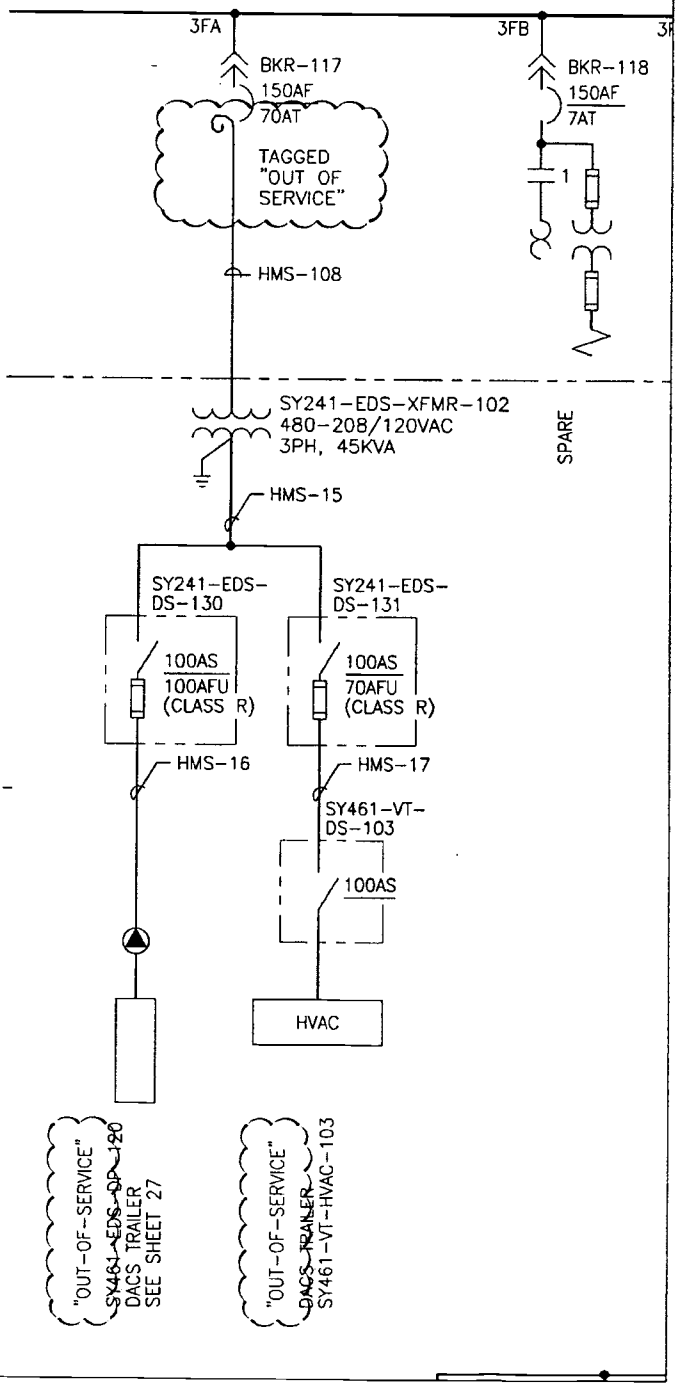
(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

MODIFY AS SHOWN IN CLOUDED AREA.

WAS ZN 5D



IS



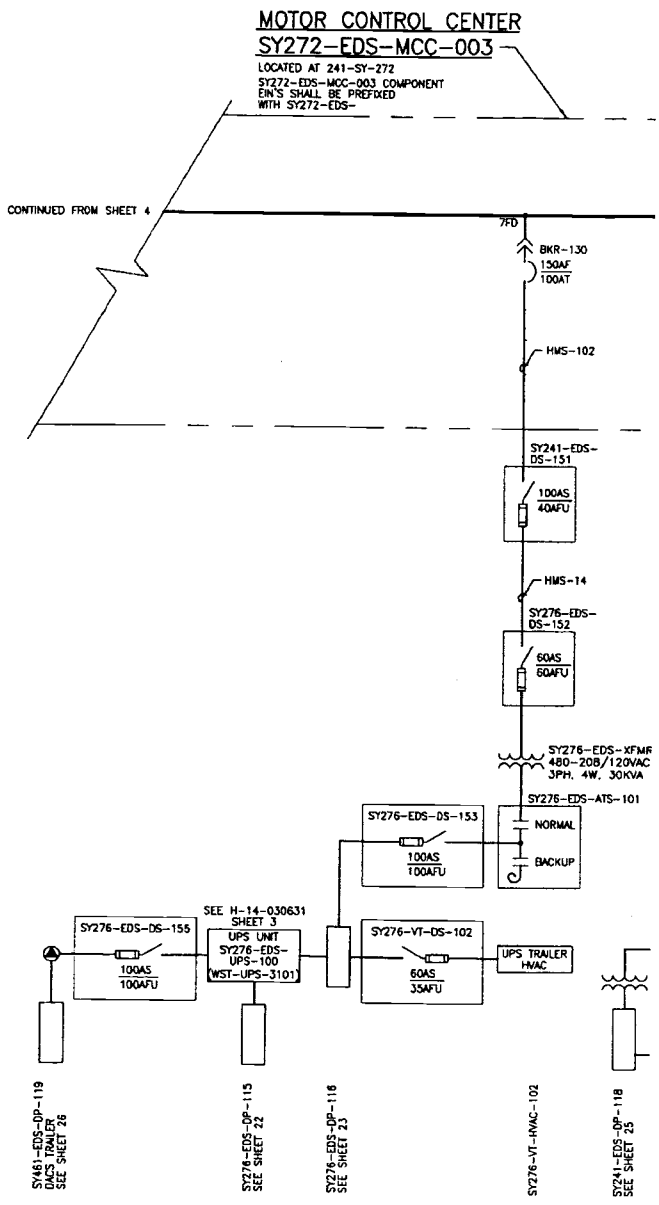
WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 5 of 12 DM☐ FM☒ TM☐	1a. ECN 726166 R 0 1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 5 Revision 6

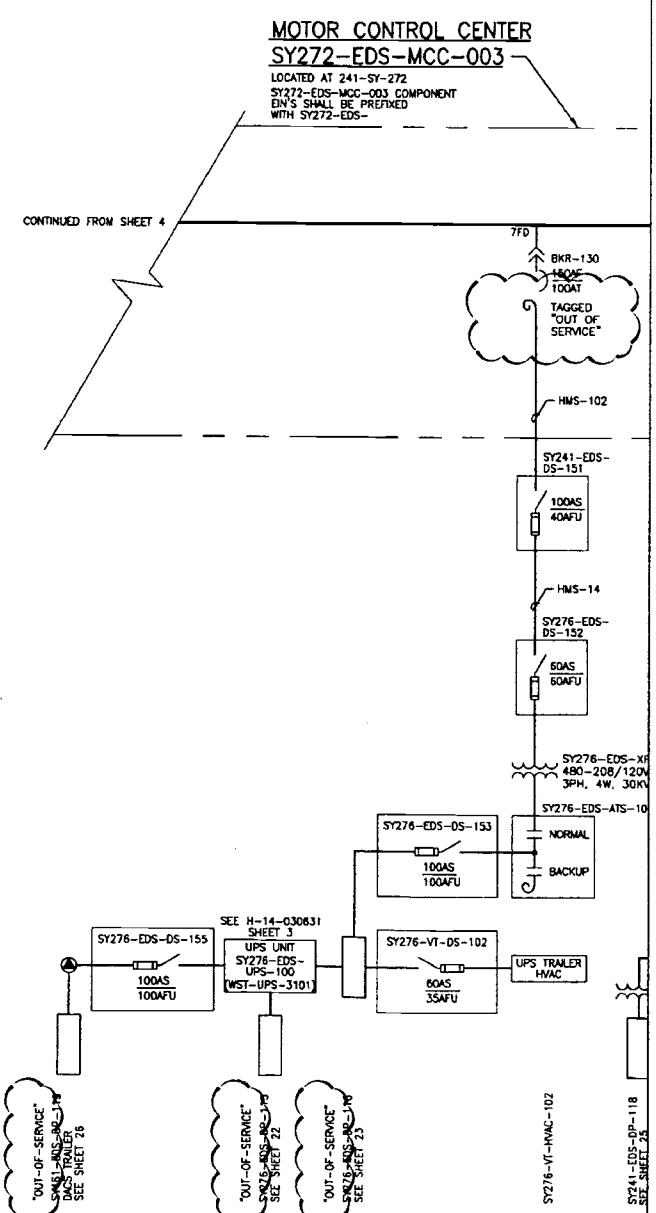
(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

MODIFY AS SHOWN IN CLOUDED AREA.

WAS ZN 6,7,8/B-E



IS



WRPS ENGINEERING CHANGE NOTICE
CONTINUATION SHEET

DM ☐ FM ☒ TM ☐

1a. ECN 726166R 0

1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 22 Revision 0

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS

PANELBOARD: SY276-EDS-DP-115 LOCATION: UPS TRAILER (241-SY-276) VOLTAGE: 120/240VAC, 1PH, 3W
FED FROM: SY276-EDS-UPS-100 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 1
■ SURFACE MOUNT
☐ FLUSH MOUNT

☐ MAIN BREAKER
■ LUGS ONLY
■ TOP ☐ BOTTOM FEED

100 AMP BUS
AMP NEUT
☐ GROUND BUS

☐ PANELBOARD GROUND FAULT PROTECTION
☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): NA
FEEDER BRKR RATING (AIC): NA

WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
1000		LOAD BANK HEATER		1	30	30	2		LOAD BANK HEATER	2000			
	2000	LOAD BANK HEATER		3	30	30	4		LOAD BANK HEATER		2000		
2000		LOAD BANK HEATER		5	30	30	6		SPARE	–			
3000	2000	TOTAL WATTS PHASE A: 5000 TOTAL WATTS PHASE B: 4000 TOTAL: 9000							SUBTOTAL	2000	2000		

ACTUAL BREAKER CONFIGURATION

SPACE	1	2	3	4	5	6	SPACE

FOR FIELD VERIFICATION STATUS SEE REV 0

REV 0

MODIFY AS SHOWN IN CLOUDED AREA.

IS

1

PANELBOARD: SY276-EDS-DP-115 LOCATION: UPS TRAILER (241-SY-276) VOLTAGE: 120/208VAC, 1PH, 3W
FED FROM: SY276-EDS-UPS-100 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 1
■ SURFACE MOUNT
☐ FLUSH MOUNT

☐ MAIN BREAKER
■ LUGS ONLY
■ TOP ☐ BOTTOM FEED

100 AMP BUS
AMP NEUT
☐ GROUND BUS

☐ PANELBOARD GROUND FAULT PROTECTION
☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): NA
FEEDER BRKR RATING (AIC): NA

WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
1000		LOAD BANK HEATER		1	30	30	2		LOAD BANK HEATER	2000			
	2000	LOAD BANK HEATER		3	30	30	4		LOAD BANK HEATER		2000		
2000		LOAD BANK HEATER		5	30	30	6		SPARE	–			
3000	2000	TOTAL WATTS PHASE A: 5000 TOTAL WATTS PHASE B: 4000 TOTAL: 9000							SUBTOTAL	2000	2000		

NOTES:

1 POWER FEEDERS FROM SY272-EDS-MCC-003, COMPARTMENT 7FD CIRCUIT BREAKER BKR-130, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD.

ACTUAL BREAKER CONFIGURATION

SPACE	1	2	3	4	5	6	SPACE

FOR FIELD VERIFICATION STATUS SEE REV 0

REV 0

WRPS ENGINEERING CHANGE NOTICE
CONTINUATION SHEET

DM ☐ FM ☒ TM ☐

1a. ECN 726166R 0

1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 23 Revision 2

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB-24429-1M
MAIN BRKR TYPE: SQUARE D

PANELBOARD: SY278-EDS-DP-116 LOCATION: UPS TRAILER (241-SY-278) VOLTAGE: 208Y/120V, 3PH, 4W
FED FROM: SY272-EDS-MCC-003, COMPT 7FD VIA SY278-EDS-DS-153 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 1 ■ SURFACE MOUNT ☐ FLUSH MOUNT ■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ■ BOTTOM 100 AMP BUS AMP NEUT ☐ GROUND BUS ☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): 10,000
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	C	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
SEE SHEET 5 FOR DISCONNECT SWITCH FED FROM THIS BREAKER		5000			AIR CONDITIONER/HEATER		1	40		20	2		INTERIOR & EXTERIOR LIGHTS	400				
			5000		SY278-VT-HVAC-102					20	4		INTERIOR RCPT		540			
				–	SPARE		5	20		20	6		SPARE BTRY CHGR WST-PS-3115			400		
FEEDS FUSE F1 (10A)		100			OVERTEMP SWITCH FEED (120V)		7	20		20	8		UTILITY MONITOR RECEPTACLE	60				
			–		SPACE		9								60			
OVERTEMP SHUNT TRIP		3600		3600	UPS INPUT RECTIFIER AND PHASE		11	60								60		
					SEQUENCE MONITOR BRKR					20	14		SPARE	–				
			3600		WITH SHUNT TRIP WST-UV-3120						16		SPACE		–			
				25	RELAY #7 UPS MONITOR BOX		17	20		100	18		MANUAL TRANSFER SWITCH WST-MTS-3125			–		
		–			SPACE		19				20		SPARE POLE, NOT TO BE USED	–				
			–		SPACE		21			100	22		SY278-EDS-UPS-100 INTERNAL BYPASS INPUT		–			SY278-EDS-UPS-100 WAS WST-UPS-3101
				–	SPACE		23				24		SPARE POLE, NOT TO BE USED			–		
					MAIN BREAKER			100										
	SUBTOTAL	8700	8600	3625									SUBTOTAL	460	600	460		

TOTAL WATTS PHASE A: 9160
TOTAL WATTS PHASE B: 9200
TOTAL WATTS PHASE C: 4060
TOTAL: 22445

FOR FIELD VERIFICATION STATUS SEE ➡ REV 0

REV 2 SH 23 OF 030031

MODIFY AS SHOWN IN CLOUDED AREA.

IS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB-24429-1M
MAIN BRKR TYPE: SQUARE D

1 PANELBOARD: SY278-EDS-DP-116 LOCATION: UPS TRAILER (241-SY-278) VOLTAGE: 208Y/120V, 3PH, 4W
FED FROM: SY272-EDS-MCC-003, COMPT 7FD VIA SY278-EDS-DS-153 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 1 ■ SURFACE MOUNT ☐ FLUSH MOUNT ■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ■ BOTTOM 100 AMP BUS AMP NEUT ☐ GROUND BUS ☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): 10,000
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	C	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
SEE SHEET 5 FOR DISCONNECT SWITCH FED FROM THIS BREAKER		5000			AIR CONDITIONER/HEATER		1	40		20	2		INTERIOR & EXTERIOR LIGHTS	400				
			5000		SY278-VT-HVAC-102					20	4		INTERIOR RCPT		540			
				–	SPARE		5	20		20	6		SPARE BTRY CHGR WST-PS-3115			400		
FEEDS FUSE F1 (10A)		100			OVERTEMP SWITCH FEED (120V)		7	20		20	8		UTILITY MONITOR RECEPTACLE	60				
			–		SPACE		9								60			
OVERTEMP SHUNT TRIP		3600		3600	UPS INPUT RECTIFIER AND PHASE		11	60								60		
					SEQUENCE MONITOR BRKR					20	14		SPARE	–				
			3600		WITH SHUNT TRIP WST-UV-3120						16		SPACE		–			
				25	RELAY #7 UPS MONITOR BOX		17	20		100	18		MANUAL TRANSFER SWITCH WST-MTS-3125			–		
		–			SPACE		19				20		SPARE POLE, NOT TO BE USED	–				
			–		SPACE		21			100	22		SY278-EDS-UPS-100 INTERNAL BYPASS INPUT		–			SY278-EDS-UPS-100 WAS WST-UPS-3101
				–	SPACE		23				24		SPARE POLE, NOT TO BE USED			–		
					MAIN BREAKER			100										
	SUBTOTAL	8700	8600	3625									SUBTOTAL	460	600	460		

TOTAL WATTS PHASE A: 9160
TOTAL WATTS PHASE B: 9200
TOTAL WATTS PHASE C: 4060
TOTAL: 22445

NOTES:
1 POWER FEEDERS FROM SY272-EDS-MCC-003, COMPARTMENT 7FD CIRCUIT BREAKER BKR-130, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD.

FOR FIELD VERIFICATION STATUS SEE ➡ REV 0

REV 2 SH 23 OF -14-030031

BLDG NO. 241SY 241SY278

WRPS ENGINEERING CHANGE NOTICE
CONTINUATION SHEET

DM ☐ FM ☒ TM ☐

1a. ECN 726166 R 0

1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 26 Revision 1

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB
MAIN BRKR TYPE: SQUARE D

PANELBOARD: SY461-EDS-DP-119 LOCATION: DACS TRAILER MO-461 VOLTAGE: 120V, 1PH
FED FROM: DACS UPS UNIT VIA SY278-EDS-DS-155 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: ☐ SURFACE MOUNT ■ FLUSH MOUNT
■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ☐ BOTTOM FEED
100 AMP BUS 100 AMP NEUT ☐ GROUND BUS
☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): TBD
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
					SPACE USED FOR MAIN BREAKER					MAIN BREAKER (SEE NOTE 1)					
				-	SPACE					SHUNT TRIP FOR MAIN BREAKER			-		
				-	SPACE					SPACE			-		
				-	SPACE					SPACE			-		
				1400	INSTR RACK #14 PLUGMOLD		1	2		INSTR RACK #14 TWISTLOCK RCPT			2800		
				1400	INSTR RACK #12 PLUGMOLD		3	4		INSTR RACK #13 PLUGMOLD			1400		
				1400	INSTR RACK #10 PLUGMOLD		5	6		INSTR RACK #11 PLUGMOLD			1400		
				1400	INSTR RACK #8 PLUGMOLD		7	8		CONSOLES 1 & 2 RECEPTACLES			720		
				720	CONSOLES 5 & 6 RECEPTACLES		9	10		INSTR RACK #9 PLUGMOLD			1400		
				720	CONSOLES 7 & 8 RECEPTACLES		11	12		INSTR RACK #7 PLUGMOLD			1400		
				1400	INSTR RACK #6 PLUGMOLD		13	14		CONSOLES 3 & 4 RECEPTACLES			720		
				-	SPACE		15	16		SPARE			-		
				-	SPACE		17	18		SPARE			-		
	SUBTOTAL	-	-	8440						SUBTOTAL	-	-	9640		

TOTAL WATTS PHASE A: -
TOTAL WATTS PHASE B: -
TOTAL WATTS PHASE C: 18,080
TOTAL: 18,080 (SEE NOTE 2)

NOTE:
1. FIRE PROTECTION SHUT RELAY INSTALLED. SEE H-2-822862, SH 1.
2. ALL LOADS LISTED IN THIS PANELBOARD ARE SUPPLIED ONLY BY 'C' PHASE POWER. NEITHER PHASES 'A' OR 'B' SUPPLY ANY OF THESE LOADS.

PARTIALLY SUPERSEDES DWG H-2-822862, SH 1, REV 0

BUILDING NO. 241-SY, MO-461
ESSENTIAL DRAWING

FOR FIELD VERIFICATION STATUS SEE ⇒ 0

MODIFY AS SHOWN IN CLOUDED AREA.

IS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB
MAIN BRKR TYPE: SQUARE D

5 PANELBOARD: SY461-EDS-DP-119 LOCATION: DACS TRAILER MO-461 VOLTAGE: 120V, 1PH
FED FROM: DACS UPS UNIT VIA SY278-EDS-DS-155 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: ☐ SURFACE MOUNT ■ FLUSH MOUNT
■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ☐ BOTTOM FEED
100 AMP BUS 100 AMP NEUT ☐ GROUND BUS
☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): TBD
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
					SPACE USED FOR MAIN BREAKER					MAIN BREAKER (SEE NOTE 1)					
				-	SPACE					SHUNT TRIP FOR MAIN BREAKER			-		
				-	SPACE					SPACE			-		
				-	SPACE					SPACE			-		
				1400	INSTR RACK #14 PLUGMOLD		1	2		INSTR RACK #14 TWISTLOCK RCPT			2800		
				1400	INSTR RACK #12 PLUGMOLD		3	4		INSTR RACK #13 PLUGMOLD			1400		
				1400	INSTR RACK #10 PLUGMOLD		5	6		INSTR RACK #11 PLUGMOLD			1400		
				1400	INSTR RACK #8 PLUGMOLD		7	8		CONSOLES 1 & 2 RECEPTACLES			720		
				720	CONSOLES 5 & 6 RECEPTACLES		9	10		INSTR RACK #9 PLUGMOLD			1400		
				720	CONSOLES 7 & 8 RECEPTACLES		11	12		INSTR RACK #7 PLUGMOLD			1400		
				1400	INSTR RACK #6 PLUGMOLD		13	14		CONSOLES 3 & 4 RECEPTACLES			720		
				-	SPACE		15	16		SPARE			-		
				-	SPACE		17	18		SPARE			-		
	SUBTOTAL	-	-	8440						SUBTOTAL	-	-	9640		

TOTAL WATTS PHASE A: -
TOTAL WATTS PHASE B: -
TOTAL WATTS PHASE C: 18,080
TOTAL: 18,080 (SEE NOTE 2)

NOTE:
1. FIRE PROTECTION SHUT RELAY INSTALLED. SEE H-2-822862, SH 1.
2. ALL LOADS LISTED IN THIS PANELBOARD ARE SUPPLIED ONLY BY 'C' PHASE POWER. NEITHER PHASES 'A' OR 'B' SUPPLY ANY OF THESE LOADS.

5 POWER FEEDERS FROM SY272-EDS-MCC-003, COMPARTMENT 3F,A CIRCUIT BREAKER BKR-117, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD.

PARTIALLY SUPERSEDES DWG H-2-822862, SH 1, REV 0

BUILDING NO. 241-SY, MO-461

DRAWN VJ BENDER DATE 05/98

U.S. DEPARTMENT OF ENERGY

FOR FIELD VERIFICATION STATUS SEE ⇒ 0

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET	1a. ECN 726166R 0
Page 9 of 12 DM☐ FM☒ TM☐	1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030031 Sheet 27 Revision 1

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB
MAIN BRKR TYPE: SQUARE D

PANELBOARD: SY481-EDS-DP-120 LOCATION: DACS TRAILER MO-481 VOLTAGE: 120/208V, 3PH, 4W
FED FROM: SY272-EDS-MCC-003 COMPT 3FA VIA SY241-EDS-DS-130 ONE LINE DWG NO: H-14-030031 SH 3

NEMA TYPE: ☐ SURFACE MOUNT ■ FLUSH MOUNT
■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ☐ BOTTOM FEED
100 AMP BUS 100 AMP NEUT ■ GROUND BUS
☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): UNABLE TO VERIFY
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	A B C	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
		600			INTERIOR LIGHTS CURBSIDE		1	20	2		CURBSIDE RECEPTACLES	360				
			400		INTERIOR LIGHTS CURBSIDE		3	20	4		WORKBENCH PLUGMODE		1200			
				500	EXTERIOR LIGHTS		5	20	6		PRINTER PLUGMODE			400		
		600			INTERIOR LIGHTS STREET SIDE		7	20	8		STREET SIDE PLUGMODE	1400				
			560		CURBSIDE SPOTLIGHTS		9	20	10		WKBNCH PLGMD/EMERGENCY LIGHTS		1200			
				1440	EXT RCPT/EMERGENCY LIGHT		11	20	12		CURBSIDE RECEPTACLES			1080		
		-			SPARE		13	20	14		SPARE	-				
			-		SPARE		15	20	16		SPARE		-			
				-	SHUNT TRIP FOR MAIN BREAKER		17	20	18		SPARE			-		
					MAIN BREAKER (SEE NOTE 1)		19	100	20		SPACE USED FOR MAIN BREAKER					
		-			SPACE		25		26		SPACE	-				
			-		SPACE		27		28		SPACE		-			
				-	SPACE		29		30		SPACE			-		
	SUBTOTAL	1200	960	1940							SUBTOTAL	1760	2400	1480		

TOTAL WATTS PHASE A: 2960
TOTAL WATTS PHASE B: 3360
TOTAL WATTS PHASE C: 3420
TOTAL: 9740

PARTIALLY SUPERSEDES DWG H-2-822862, SH 1, REV 0

NOTE:
1. FIRE PROTECTION SHUNT RELAY INSTALLED. SEE H-2-822862, SH 1.

BUILDING NO. 241-SY, MO-481
ESSENTIAL DRAWING

FOR FIELD VERIFICATION STATUS SEE ■ 0 | REV 1 | SH 27 OF | H-14-030031

MODIFY AS SHOWN IN CLOUDED AREA.

IS

PANEL MFG: SQUARE D
PANEL TYPE (MODEL): NQOB
MAIN BRKR TYPE: SQUARE D

2 PANELBOARD: SY481-EDS-DP-120 LOCATION: DACS TRAILER MO-481 VOLTAGE: 120/208V, 3PH, 4W
FED FROM: SY272-EDS-MCC-003 COMPT 3FA VIA SY241-EDS-DS-130 ONE LINE DWG NO: H-14-030031 SH 3

NEMA TYPE: ☐ SURFACE MOUNT ■ FLUSH MOUNT
■ MAIN BREAKER ☐ LUGS ONLY ☐ TOP ☐ BOTTOM FEED
100 AMP BUS 100 AMP NEUT ■ GROUND BUS
☐ PANELBOARD GROUND FAULT PROTECTION ☐ OTHER

FEEDER BRKR TYPE: NA
MAIN BRKR RATING (AIC): UNABLE TO VERIFY
FEEDER BRKR RATING (AIC): NA

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	A B C	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
		600			INTERIOR LIGHTS CURBSIDE		1	20	2		CURBSIDE RECEPTACLES	360				
			400		INTERIOR LIGHTS CURBSIDE		3	20	4		WORKBENCH PLUGMODE		1200			
				500	EXTERIOR LIGHTS		5	20	6		PRINTER PLUGMODE			400		
		600			INTERIOR LIGHTS STREET SIDE		7	20	8		STREET SIDE PLUGMODE	1400				
			560		CURBSIDE SPOTLIGHTS		9	20	10		WKBNCH PLGMD/EMERGENCY LIGHTS		1200			
				1440	EXT RCPT/EMERGENCY LIGHT		11	20	12		CURBSIDE RECEPTACLES			1080		
		-			SPARE		13	20	14		SPARE	-				
			-		SPARE		15	20	16		SPARE		-			
				-	SHUNT TRIP FOR MAIN BREAKER		17	20	18		SPARE			-		
					MAIN BREAKER (SEE NOTE 1)		19	100	20		SPACE USED FOR MAIN BREAKER					
		-			SPACE		25		26		SPACE	-				
			-		SPACE		27		28		SPACE		-			
				-	SPACE		29		30		SPACE			-		
	SUBTOTAL	1200	960	1940							SUBTOTAL	1760	2400	1480		

TOTAL WATTS PHASE A: 2960
TOTAL WATTS PHASE B: 3360
TOTAL WATTS PHASE C: 3420
TOTAL: 9740

PARTIALLY SUPERSEDES DWG H-2-822862, SH 1, REV 0

NOTE:
1. FIRE PROTECTION SHUNT RELAY INSTALLED. SEE H-2-822862, SH 1.
2 POWER FEEDERS FROM SY272-EDS-MCC-003, COMPARTMENT 3FA CIRCUIT BREAKER BKR-117, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD.

BUILDING NO. 241-SY, MO-481
ESSENTIAL DRAWING

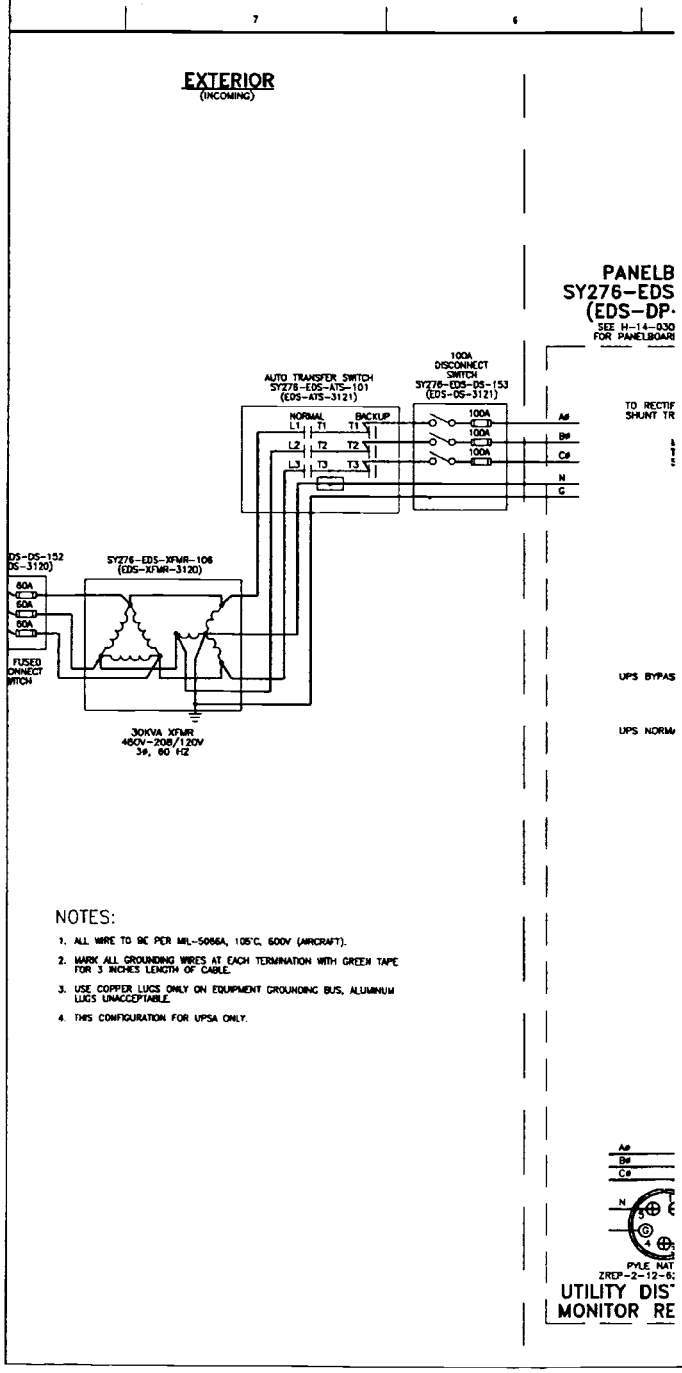
FOR FIELD VERIFICATION STATUS SEE ■ 0 | REV 1 | SH 27 OF | H-14-030031

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 10 of 12 DM☐ FM☒ TM☐	1a. ECN 726166R 0 1b. Proj. ECN W- N/A R

Document/Drawing No. H-14-030631 Sheet 3 Revision 3

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS ZN 6,7/B,E

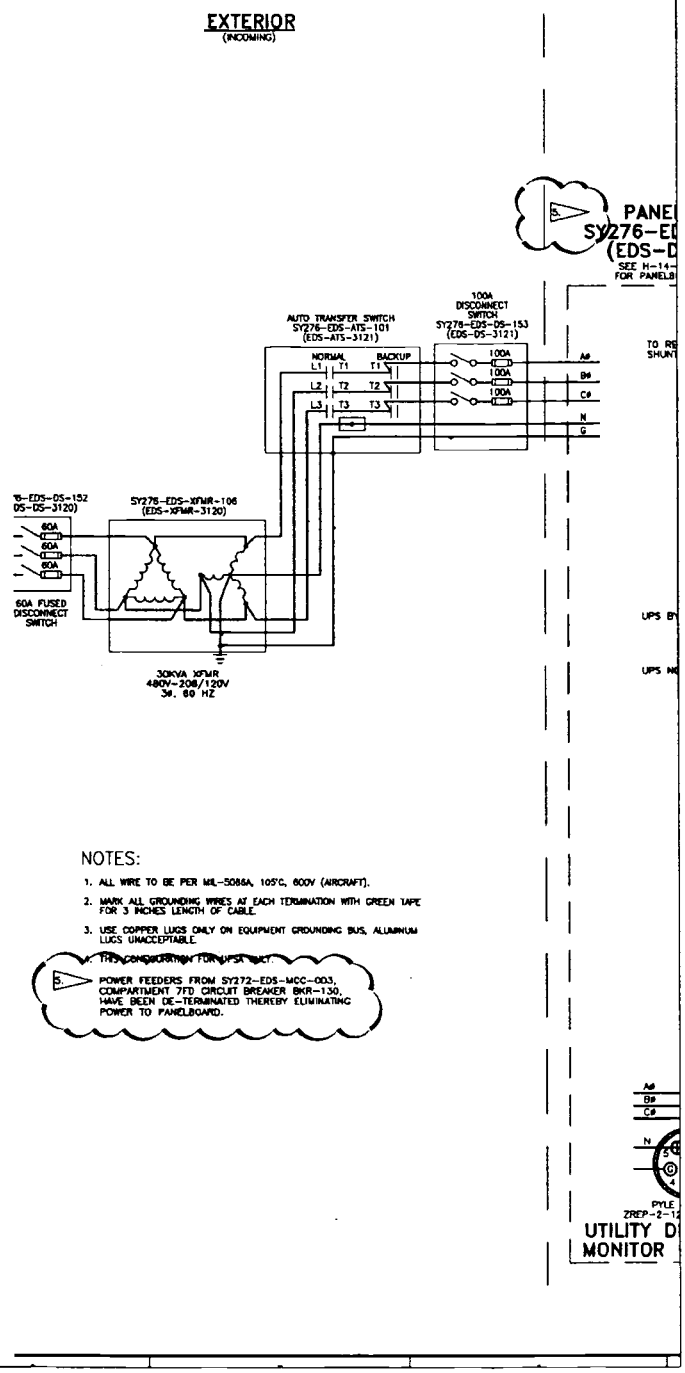


NOTES:

1. ALL WIRE TO BE PER MIL-5086A, 105°C, 600V (AIRCRAFT).
2. MARK ALL GROUNDING WIRES AT EACH TERMINATION WITH GREEN TAPE FOR 3 INCHES LENGTH OF CABLE.
3. USE COPPER LUGS ONLY ON EQUIPMENT GROUNDING BUS, ALUMINUM LUGS UNACCEPTABLE.
4. THIS CONFIGURATION FOR UPSA ONLY.

MODIFY AS SHOWN IN CLOUDED AREA.

IS



NOTES:

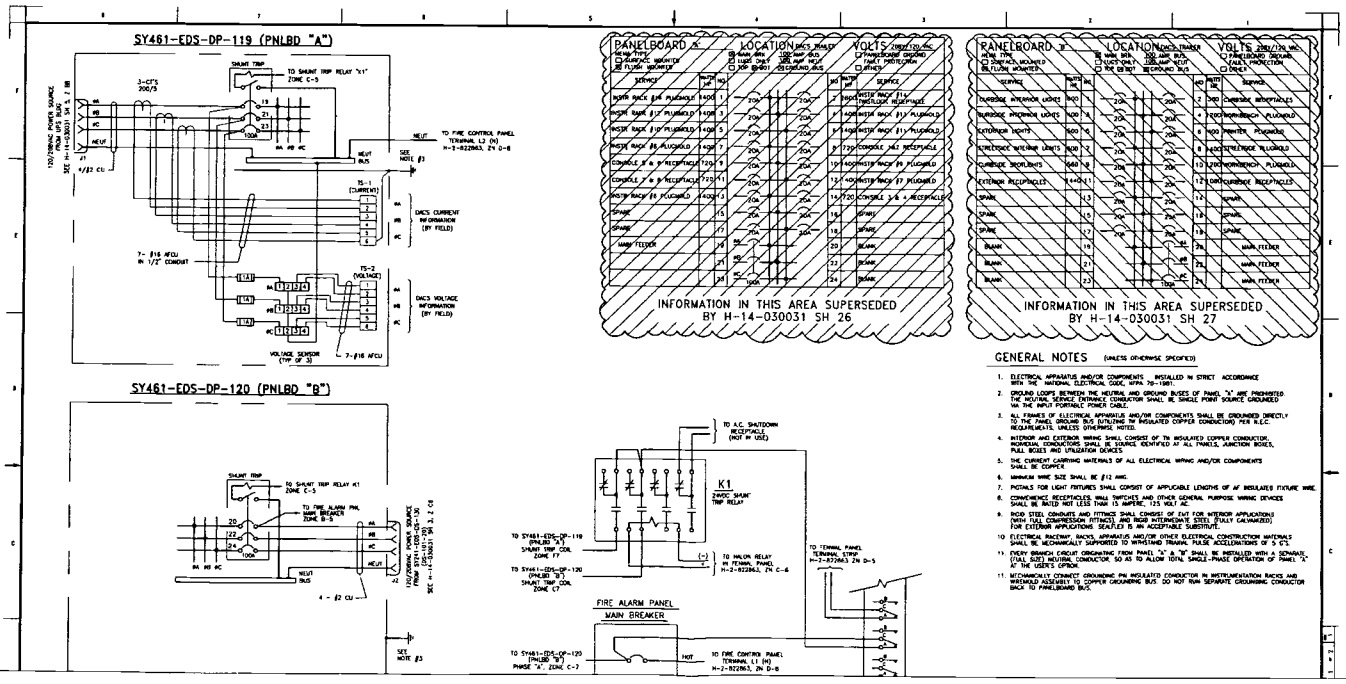
1. ALL WIRE TO BE PER MIL-5086A, 105°C, 600V (AIRCRAFT).
2. MARK ALL GROUNDING WIRES AT EACH TERMINATION WITH GREEN TAPE FOR 3 INCHES LENGTH OF CABLE.
3. USE COPPER LUGS ONLY ON EQUIPMENT GROUNDING BUS, ALUMINUM LUGS UNACCEPTABLE.
4. ~~THIS CONFIGURATION FOR UPSA ONLY.~~

5. POWER FEEDERS FROM SY272-EDS-MCC-003, COMPARTMENT 7FD CIRCUIT BREAKER BKR-130, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD.

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 11 of 12 DM☐ FM☒ TM☐	1a. ECN 726166R 0 1b. Proj. ECN W- N/A R
Document/Drawing No. H-2-822862 Sheet 1 Revision 1	

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS



GENERAL NOTES (UNLESS OTHERWISE SPECIFIED)

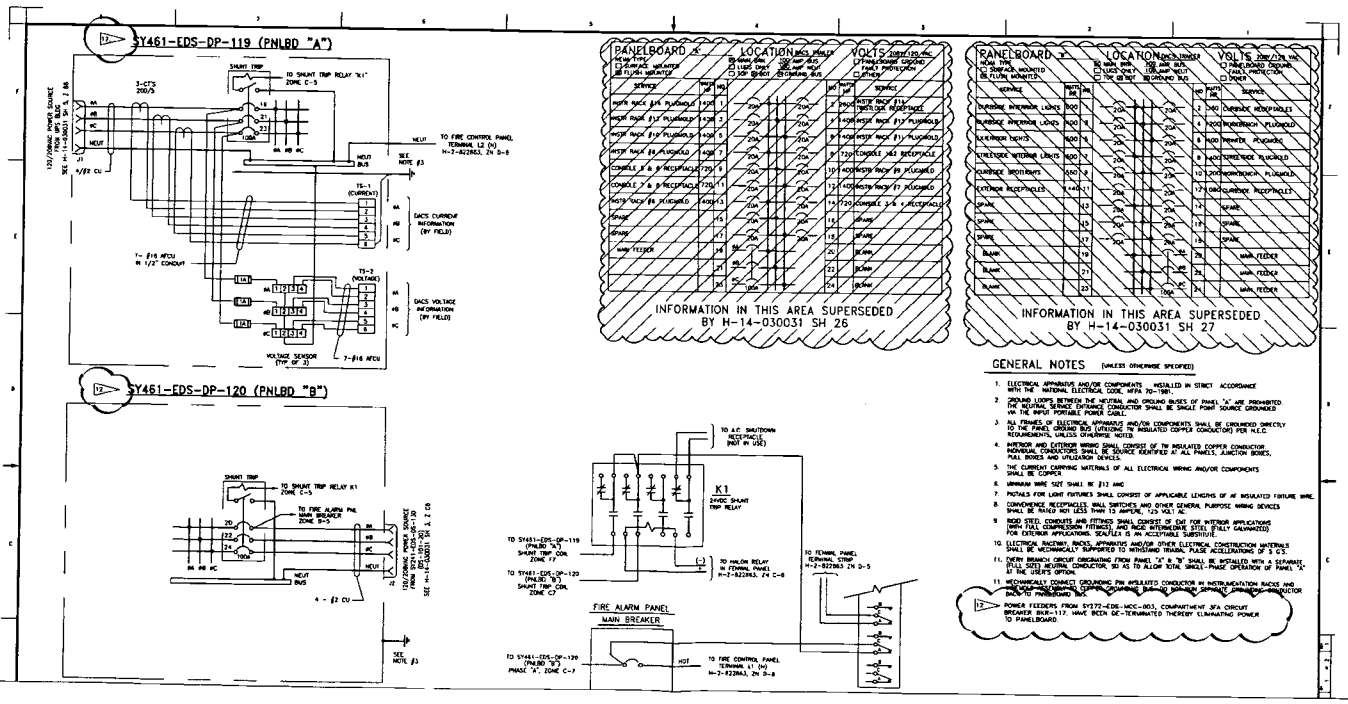
1. ELECTRICAL APPARATUS AND/OR COMPONENTS INSTALLED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA 70-1981.
2. GROUND LOOPS BETWEEN THE NEUTRAL AND GROUND BUSES OF PANEL "A" ARE PROHIBITED. THE NEUTRAL SERVICE ENTRANCE CONDUCTOR SHALL BE SINGLE POINT SOURCE GROUNDED VIA THE INPUT PORTABLE POWER CABLE.
3. ALL FRAMES OF ELECTRICAL APPARATUS AND/OR COMPONENTS SHALL BE GROUNDED DIRECTLY TO THE PANEL GROUND BUS (UTILIZING TW INSULATED COPPER CONDUCTOR) PER N.E.C. REQUIREMENTS, UNLESS OTHERWISE NOTED.
4. INTERIOR AND EXTERIOR WIRING SHALL CONSIST OF TW INSULATED COPPER CONDUCTOR. NEUTRAL CONDUCTORS SHALL BE SOURCE IDENTIFIED AT ALL PANELS, JUNCTION BOXES, PULL BOXES AND UTILIZATION DEVICES.
5. THE CURRENT CARRYING MATERIALS OF ALL ELECTRICAL WIRING AND/OR COMPONENTS SHALL BE COPPER.
6. MINIMUM WIRE SIZE SHALL BE #12 AWG.
7. PIGTAILS FOR LIGHT FIXTURES SHALL CONSIST OF APPLICABLE LENGTHS OF AF INSULATED FIXTURE WIRE.
8. CONVENIENCE RECEPTACLES SHALL SWITCHES AND OTHER GENERAL PURPOSE WIRING DEVICES SHALL BE RATED NOT LESS THAN 15 AMPERE, 125 VOLT AC.
9. RIGID STEEL CONDUITS AND FITTINGS SHALL CONSIST OF EMT FOR INTERIOR APPLICATIONS (WITH FULL COMPRESSION FITTINGS) AND RIGID INTERMEDIATE STEEL (FULLY GALVANIZED) FOR EXTERIOR APPLICATIONS. SEALTUBE IS AN ACCEPTABLE SUBSTITUTE.
10. ELECTRICAL RACEWAY, RACKS, APPARATUS AND/OR OTHER ELECTRICAL CONSTRUCTION MATERIALS SHALL BE MECHANICALLY SUPPORTED TO WITHSTAND TRANSIL PULSE ACCELERATIONS OF 5 G'S.
11. EVERY BRANCH CIRCUIT ORIGINATING FROM PANEL "A" & "B" SHALL BE INSTALLED WITH A SEPARATE, (FULL SIZE) NEUTRAL CONDUCTOR, SO AS TO ALLOW TOTAL SINGLE-PHASE OPERATION OF PANEL "A" AT THE USER'S OPTION.
11. MECHANICALLY CONNECT GROUNDING PIN INSULATED CONDUCTOR IN INSTRUMENTATION RACKS AND WIREMOLD ASSEMBLY TO COPPER GROUNDING BUS. DO NOT RUN SEPARATE GROUNDING CONDUCTOR BACK TO PANELBOARD BUS.

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 12 of 12 DM☐ FM☒ TM☐	1a. ECN 726166R 0 1b. Proj. ECN W- N/A R
Document/Drawing No. H-2-822862 Sheet 1 Revision 1	

(A seperate ECN Continuation page shall be used for each document/drawing to be modified.)

MODIFY AS SHOWN IN CLOUDED AREA.

IS



GENERAL NOTES (UNLESS OTHERWISE SPECIFIED)

1. ELECTRICAL APPARATUS AND/OR COMPONENTS INSTALLED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA 70-1981.
2. GROUND LOOPS BETWEEN THE NEUTRAL AND GROUND BUSES OF PANEL "A" ARE PROHIBITED (THE NEUTRAL SERVICE ENTRANCE CONDUCTOR SHALL BE SINGLE POINT SOURCE GROUNDED VIA THE INPUT PORTABLE POWER CABLE.
3. ALL FRAMES OF ELECTRICAL APPARATUS AND/OR COMPONENTS SHALL BE GROUNDED DIRECTLY TO THE PANEL GROUND BUS (UTILIZING IN INSULATED COPPER CONDUCTOR) PER N.E.C. REQUIREMENTS, UNLESS OTHERWISE NOTED.
4. INTERIOR AND EXTERIOR WIRING SHALL CONSIST OF TW INSULATED COPPER CONDUCTOR INDIVIDUAL CONDUCTORS SHALL BE PHASE IDENTIFIED AT ALL PANELS, JUNCTION BOXES, PULL BOXES AND UTILIZATION DEVICES.
5. THE CURRENT CARRYING MATERIALS OF ALL ELECTRICAL WIRING AND/OR COMPONENTS SHALL BE COPPER
6. MINIMUM WIRE SIZE SHALL BE #12 AWG
7. PIGTAILS FOR LIGHT FIXTURES SHALL CONSIST OF APPLICABLE LENGTHS OF AF INSULATED FIXTURE WIRE.
8. CONVENIENCE RECEPTACLES, WALL SWITCHES AND OTHER GENERAL PURPOSE WIRING DEVICES SHALL BE RATED NOT LESS THAN 15 AMPERE, 125 VOLT AC.
9. RIGID STEEL CONDUITS AND FITTINGS SHALL CONSIST OF EMT FOR INTERIOR APPLICATIONS (WITH FULL COMPRESSION FITTINGS) AND RGS INTERMEDIATE STEEL (FULLY GALVANIZED) FOR EXTERIOR APPLICATIONS. SEALTLEX IS AN ACCEPTABLE SUBSTITUTE.
10. ELECTRICAL RACEWAY, RACKS, APPARATUS AND/OR OTHER ELECTRICAL CONSTRUCTION MATERIALS SHALL BE MECHANICALLY SUPPORTED TO WITHSTAND TRANSIENT PULSE ACCELERATIONS OF 3 G'S.
11. EVERY BRANCH CIRCUIT ORIGINATING FROM PANEL "A" & "B" SHALL BE INSTALLED WITH A SEPARATE (FULL SIZE) NEUTRAL CONDUCTOR, SO AS TO ALIGN TOTAL SINGLE-PHASE OPERATION OF PANEL "A" AT THE USER'S OPTION.
11. MECHANICALLY CONNECT GROUNDING PIN INSULATED CONDUCTOR IN INSTRUMENTATION RACKS AND WIRE NEUTRAL CONDUCTOR, GROUNDING BUS(S) BONDING SEPARATE GROUNDING CONDUCTOR BACK TO PANELBOARD BUS.

12 POWER FEEDERS FROM SY372-EDE-MCC-003, COMPARTMENT 3FA CIRCUIT BREAKER BKR-117, HAVE BEEN DE-TERMINATED THEREBY ELIMINATING POWER TO PANELBOARD

Task# WRPS-PER-2008-0167.41

E-STARS[R] Report
Task Detail Report
07/08/2009 1039

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.41		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN in support of Work Package TFC-WO-08-2317 (to replace 200A breaker with 150 A breaker) is released. Deliverable		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0167	**Due**	04/29/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/31/2008 1146	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Ensure ECN in support of Work Package TFC-WO-08-2317 (to replace 200A breaker with 150 A breaker) is released. Deliverable: Electronic copy of released ECN. Reference: Issue 8.1.6 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 04/09/2009 1231 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/09/2009 1602 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.41 CLOSURE ECN-726132-R0.pdf

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 04/09/2009 1231
	Completed
	The required action was completed with the release of ECN-726132-R0 which provides the configuration changes required to replace the 200 amp breaker with a 150 amp breaker. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.
Poster	Knight, Mark A (Bragg, David A) - 04/09/2009 1602

Task# WRPS-PER-2008-0167.41

	Concur
	The required action was completed with the release of ECN-726132-R0 which provides the configuration changes required to replace the 200 amp breaker with a 150 amp breaker. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.
Poster	^PER CAs (Owen, Annette) - 04/09/2009 2032
	CLOSED
	Closure statement and attached documentation are adequate to close this action.

TASK DUE DATE HISTORY

Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	04/29/2009 0000
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	10/03/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726132 R 0

1b. Proj. ECN N/A - - R

2. Simple Modification	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date
☒ Yes ☐ No			01/20/2009
5. Originator's Name, Organization, MSIN, & Phone No.	6. PrHA Number	7. USQ Number	8. Related ECNs
Scott Norman, Fowler LLC/WRPS	No. 00659 R - 0 ☐ N/A	No. - - - R - TF-09-0213-D R0 ☐ N/A	N/A
9. Title	10. Bldg. / Facility No.	11. Equipment / Component ID	12. Approval Designator
Replace Breaker BKR-129 in SY272-EDS-MCC-003	SY Farm	SY272-EDS-BKR-129	N/A
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.)		14. Safety Designation	15. Expedited/Off-Shift ECN?
H-14-030031, Sheet 4, Rev. 2		☐ SC ☐ SS ☒ GS ☐ N/A	☐ Yes ☒ No
16a. Work Package Number	16b. Modification Work Completed	16c. Restored to Original Status (TM)	17. Fabrication Support ECN?
	Responsible Engineer / Date	N/A Responsible Engineer / Date	☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

PROBLEM: The existing #1/0awg conductors supplying power to 75kVA transformer, SY241-EDS-XFMR-105 via breaker SY272-EDS-BKR-129, are rated at 150A @75deg. C, per NEC Table 310.16. Existing SY241-EDS-BKR-129 is rated at 200A and does not provide adequate overcurrent protection of the supply conductors by exceeding the 150A rating. Calculate and adjust downstream overcurrent protection to better align with existing connected loads.

Per Facility Manager, SY101-SHM-PNL-005 and SY103-SHM-PNL-005 are off at disconnects SY241-EDS-DS-145 and SY241-EDS-DS-146 and can be removed from electrical service.

SOLUTION: Install lower amperage rated main breaker that does not exceed the amperage rating of the supply conductors. Calculate connected loads and adjust overcurrent devices accordingly.

Electrically isolate equipment by determing and safing off conductors in WW-101-1 and remove fuses that feed disconnect switches SY241-EDS-DS-145, SY-EDS-DS-146 to panels SY101-SHM-PNL-005 and SY103-SHM-PNL-005, which allows for reduced load on upstream fuses/breaker.

CONTINUED ON PAGE 3

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No

Training Impact ☐ Yes ☒ No

Replacing the existing main breaker with a lower amperage rated main breaker will provide the necessary overcurrent protection of the supply conductors per NEC. This ECN provides the design media necessary to correct the deficiency identified in RPP-RPT-38265 item 8.1.6, 8.1.7 and 8.1.8 of SY farm.

Per Facility Manager, equipment SY101-SHM-PNL-005 and SY103-SHM-PNL-005 are no longer required and power can be removed.

The probability of accident, consequences, or margin of safety for the facility worker is not impacted.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
RE Nelson	S5-07		
KL Ewer	S5-07		
MA Roberts	S5-07		

Release Stamp

FEB 13 2009
DATE:
STA: 4
HANFORD RELEASE
ID: 18

ENGINEERING CHANGE NOTICE	1a. ECN 726132 R 0
Page 2 of 4 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN N/A - - R

22. Revisions Planned (Include a brief description of the contents of each revision)

N/A

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. Commercial Grade Item Dedication Numbers (associated with this design change)

N/A

24. Engineering Data Transmittal Numbers (associated with this design change, e.g., new drawings, new documents)

N/A

25. Other Non Engineering (not in HDCS) documents that need to be modified due to this change

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	N/A		
Operations Procedure	N/A		
Maintenance Procedure	N/A		

26. Field Change Notice(s) Used?

☐ Yes ☒ No

If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. Design Verification Required?

☐ Yes ☒ No

If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. Approvals

	Facility/Project Signatures	Date		A/E Signatures	Date
Resp. Engineer	RE Nelson	1/26/09	Originator/Design Agent	~~SA Norman~~	
Resp. Manager	MA Roberts W.M. HARTY for	2/12/2009	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	KL Ewer	2/10/2009	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

ANALYSIS: The new main breaker will be UL listed and approved and there will be no additional electrical loads. Per NEC 240.4 and 450.3(B) lowering the ampacity of the main breaker for transformer SY241-EDS-XFMR-105 will provide overcurrent protection of the transformer primary conductors, and also provide adequate transformer protection for connected loads. The electrical isolation of non-active equipment reduces the risk of electrical hazards and maintenance activities.

See RPP-RPT-38265 Rev. 1, items 8.1.6, 8.1.7, and 8.1.8 for SY Farm

Reference Drawings H-2-83031, Sheets 1 & 6 and H-2-14-030031, Sheets 20 & 21

75kVA Transformer – 480V to 240/120V

Primary – 75000VA/480V=156.25A

Secondary – 75000kVA/240V=312.5A

Connected Loads – Per panel schedules and if load is unknown, assumed 80% of existing over current protection.

SY101-VTP-ENCL-101 = 50A over current =12000W@240V
12000W*.8=9600W
9600W/240V=40A

SY101-WST-ENCL-102 and SY101-WST-ENCL-101 = 50A over current =12000W@240V
12000W*.75=9600W
9600W/240V=40A
40A/2=20A each

SY275-EDS-DP-113 = 23566W per panel schedule
23556W/240V=98.19A

SY241-EDS-DS-150 = 40A over current, but feeds 30A receptacle = 7200W
7200W/240V=30A

Total Calculated Secondary Load

40A+20A+20A+98.19A+30A=208A

HMS-19A is 350MCM THWN and is rated at 310A per NEC Table 310.16; therefore the connected secondary load is less than the rating of the conductor and the over current protection is adequate for the conductor.

Total Calculated Primary Load

9600W+9600W+23566W+7200W=49966W
49966W/480V=104.16A

HMS-107 is #1/0 XHHW and is rated at 150A per NEC Table 310.16, therefore the connected primary load is less than the rating of the conductor and the over current protection is adequate for the conductor. Although, the over current protection for the conductor, breaker SY272-EDS-BKR-129 is listed at 200A. The breaker amperage will be changed to 150A in order to adequately protect the conductor.

Conclusion-Recommendations

Change SY272-EDS-BKR-129 from 200A to 150A
Change SY241-EDS-DS-143 from 200A to 100A
Change SY241-EDS-DS-148 from 200A to 125A
Change SY241-EDS-DS-142 from 200A to 100A
Change SY241-EDS-DS-149 from 200A to 125A
Change SY241-EDS-DS-150 from 40A to 30A

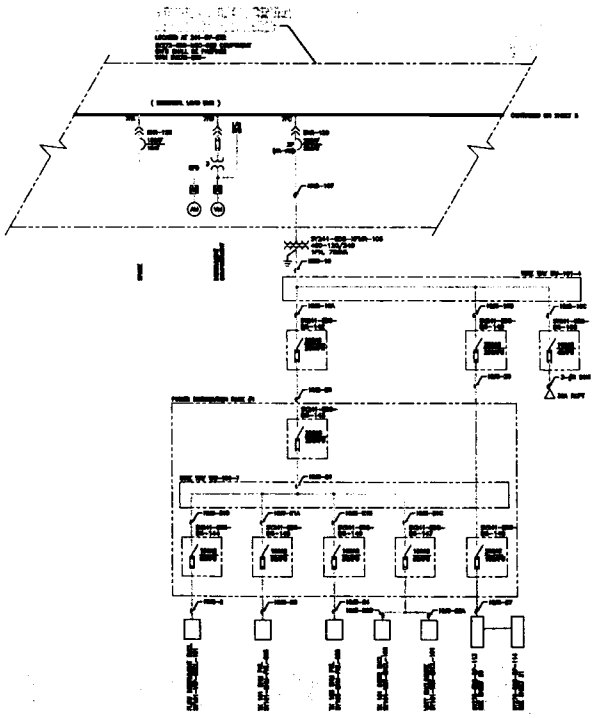
Note: An AutoCAD page may be used in place of this form (the header section items must be included on the AutoCAD page).

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 4 of 4	☐ DM ☒ FM ☐ TM	1a. ECN-726132-R0 1b. Proj. ECN N/A

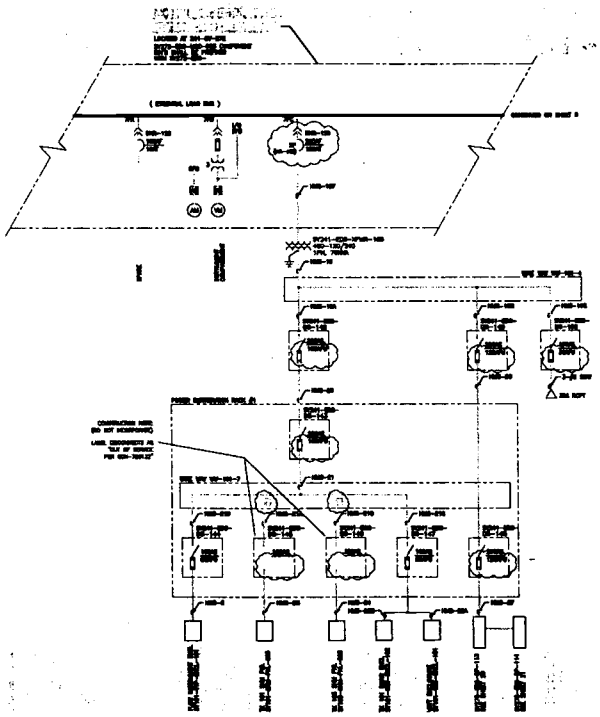
Document/Drawing No. H-2-030031 Sheet 4 Revision 2

(Note: A separate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS:



IS:



A-8003-565 (01/03)

Task# WRPS-PER-2008-0167.42

E-STARS[R] Report
Task Detail Report
07/08/2009 1040

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.42		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN in support of Work Package TFC-WO-08-2318 (to replace 80A breaker EDS-DP-118 with a 40A breaker) is released. D		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0167	**Due**	05/13/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/31/2008 1146	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Ensure ECN in support of Work Package TFC-WO-08-2318 (to replace 80A breaker EDS-DP-118 with a 40A breaker) is released. Deliverable: Electronic copy of released ECN. Reference: Issue 8.1.10 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 04/09/2009 1259 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/09/2009 1604 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.42 CLOSURE ECN 726117.pdf

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 04/09/2009 1259
	Completed
	The required action was completed with the release of ECN-726117-R0 which provides the configuration changes required to replace the 80 amp breaker with a 50 amp breaker, which complies with NEC code requirements. Note that the 50 amp breaker resolves the issue identified by this PER equally well or better than a 40 amp breaker. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.

Task# WRPS-PER-2008-0167.42

Poster	Knight, Mark A (Bragg, David A) - 04/09/2009 1604		
	Concur		
	The required action was completed with the release of ECN-726117-R0. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.		
Poster	^PER CAs (Owen, Annette) - 04/09/2009 2037		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	05/13/2009 0000
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

S

ENGINEERING CHANGE NOTICE	1a. ECN 726117 R 0
Page 1 of 3 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN N/A - - R

2. Simple Modification ☒ Yes ☐ No	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date 01/13/2009
5. Originator's Name, Organization, MSIN, & Phone No. Scott Norman, Fowler LLC/WRPS	6. PrHA Number No. 00648 R - 0 ☐ N/A	7. USQ Number No. - - - R - Ø TF-09-0042-D ☐ N/A	8. Related ECNs N/A
9. Title SY241-EDS-DP-118 Main Breaker Replacement	10. Bldg. / Facility No. SY Farm	11. Equipment / Component ID SY241-EDS-DP-118	12. Approval Designator N/A
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) H-14-030031, Sheet 25, Rev. 2		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number	16b. Modification Work Completed Responsible Engineer / Date	16c. Restored to Original Status (TM) N/A Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. Description of the Change (Use ECN Continuation pages as needed)

PROBLEM: The existing conductors supplying SY241-EDS-DP-118 via SY241-EDS-DP-117 are rated at 70A max. There is currently an 80A main breaker installed in SY241-EDS-DP-118 that does not provide adequate overcurrent protection of the suplly conductors by exceeding the 70A amperage rating.

SOLUTION: Install lower amperage rated main breaker that does not exceed the amperage rating of the supply conductors.

ANALYSIS: The new main breaker will be UL listed and approved and there will be no additional electrical loads. Per NEC 240.21(C) and 450.3(B) lowering the ampacity of the main breaker for panel SY241-EDS-DP-118 will provide overcurrent protection of the transformer secondary conductors, and also provide adequate distribution panel protection.

19. Justification of the Change (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

Replacing the existing main breaker with a lower amperage rated main breaker will provide the necessary overcurrent protection of the supply conductors per NEC. This ECN provides the design media necessary to correct the deficiency identified in RPP-RPT-38265 item 8.1.10 and 8.1.12 of SY farm. The probability of accident, consequences, or margin of safety for the facility worker is not impacted.

20. ECN Category

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. Distribution

Name	MSIN	Name	MSIN
RE Nelson	S5-07		
KL Ewer	S5-07		
MA Roberts	S5-07		

Release Stamp

DATE: JAN 28 2009
HANFORD RELEASE
STA: 4 ID: 8

ENGINEERING CHANGE NOTICE	1a. ECN 726117 R 0
Page 2 of 3 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN N/A - - R

22. Revisions Planned (Include a brief description of the contents of each revision)

N/A

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. Commercial Grade Item Dedication Numbers (associated with this design change)

N/A

24. Engineering Data Transmittal Numbers (associated with this design change, e.g., new drawings, new documents)

N/A

25. Other Non Engineering (not in HDCS) documents that need to be modified due to this change

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	N/A		
Operations Procedure	N/A		
Maintenance Procedure	N/A		

26. Field Change Notice(s) Used?

☐ Yes ☒ No

If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. Design Verification Required?

☐ Yes ☒ No

If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. Approvals

Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	RE Nelson	1/13/08	Originator/Design Agent	SA Norman	1/13/09
Resp. Manager	MA Roberts	01/26/09	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	KL Ewer	1/13/2009	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

CH2MHill ENGINEERING CHANGE NOTICE CONTINUATION SHEET	☐ DM	1a. ECN-726117-R0
	☒ FM	1b. Proj. ECN N/A
Page 3 of 3	☐ TM	

Document/Drawing No. H-14-030031 Sheet 25 Revision 2

(Note: A separate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS:

PANEL MFG: GENERAL ELECTRIC
PANEL TYPE (MODEL): SERIES A (AQF1121A8)
MAIN BRKR TYPE: THQB

PANELBOARD: SY241-EDS-DP-118 LOCATION: A TRAIN PRIMARY EXHAUST VOLTAGE: 120/240VAC, 1PH, 3W
FED FROM: SY241-EDS-DP-117, BKR 14 VIA SY241-EDS-XFMR-107 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 3R ■ MAIN BREAKER 125 AMP BUS ☐ PANELBOARD GROUND FAULT PROTECTION
■ SURFACE MOUNT ☐ LUGS ONLY ___ AMP NEUT
☐ FLUSH MOUNT ☐ TOP ■ BOTTOM FEED ■ GROUND BUS ☐ OTHER

FEEDER BRKR TYPE: THQB
MAIN BRKR RATING (AIC): 10K
FEEDER BRKR RATING (AIC): 10K

REMARKS	SCHEME NUMBER	WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
SY241-VTP-YYC-400		50		D/P PLC ENCL SY241-VTP-ENCL-124		1	15A		2		SPACE	–			
SEE NOTE 1 BELOW			1800	SY241-VTP-ENCL-124 GFCI RECEPTACLE PLC HEATERS & RECIRCULATION FAN		3	20A	20A	4		SY241-VTP-ENCL-401 ALARM CABINET INSTRUMENTS		300		
		180		RECEPTACLE (GFCI)		5	15A	20A	6		SY241-VTP-ENCL-401 ALARM CABINET HEATERS & LIGHT	1220			SY241-VTP-HTR-401 & 402
TO TEMP SWITCH SY241-VTP-TC-401			300	HEAT TRACING		7	15A	15A	8		SY241-VTP-ENCL-400 DUCT HEATER CONT CAB HEATER		800		SY241-VTP-HTR-400
STACK MONITOR CABINET		500		SY296-VTP-ENCL-602 PRESS/FLOW XMTR AND CONTROLLER		9	15A	20A	10		SY296-VTP-ENCL-601 (SY296-VTP-HTR-601 AND HEAT TRACE)	1200			SY296-VTP-AC-601 IN SY296-VTP-ENCL-602
STACK MONITOR CABINET			400	SY296-VTP-ENCL-602 INSTR, HORN		11	20A	20A	12		SY296-VTP-ENCL-602		1200		SY296-VTP-HTR-602 AND SY296-VTP-AC-602
		–		SPACE		13			14		SPACE	–			
				MAIN BREAKER		15	80A		16		SPACE		–		
									18		SPACE	–			
SUBTOTAL		730	2500								SUBTOTAL	2420	2300		

TOTAL WATTS PHASE A: 3150
TOTAL WATTS PHASE B: 4800
TOTAL: 7950

IS:

PANEL MFG: GENERAL ELECTRIC
PANEL TYPE (MODEL): SERIES A (AQF1121A8)
MAIN BRKR TYPE: THQB

PANELBOARD: SY241-EDS-DP-118 LOCATION: A TRAIN PRIMARY EXHAUST VOLTAGE: 120/240VAC, 1PH, 3W
FED FROM: SY241-EDS-DP-117, BKR 14 VIA SY241-EDS-XFMR-107 ONE LINE DWG NO: H-14-030031 SH 5

NEMA TYPE: 3R ■ MAIN BREAKER 125 AMP BUS ☐ PANELBOARD GROUND FAULT PROTECTION
■ SURFACE MOUNT ☐ LUGS ONLY ___ AMP NEUT
☐ FLUSH MOUNT ☐ TOP ■ BOTTOM FEED ■ GROUND BUS ☐ OTHER

FEEDER BRKR TYPE: THQB
MAIN BRKR RATING (AIC): 10K
FEEDER BRKR RATING (AIC): 10K

REMARKS	SCHEME NUMBER	WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.	A	B	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
SY241-VTP-YYC-400		50		D/P PLC ENCL SY241-VTP-ENCL-124		1	15A		2		SPACE	–			
SEE NOTE 1 BELOW			1800	SY241-VTP-ENCL-124 GFCI RECEPTACLE PLC HEATERS & RECIRCULATION FAN		3	20A	20A	4		SY241-VTP-ENCL-401 ALARM CABINET INSTRUMENTS		300		
		180		RECEPTACLE (GFCI)		5	15A	20A	6		SY241-VTP-ENCL-401 ALARM CABINET HEATERS & LIGHT	1220			SY241-VTP-HTR-401 & 402
TO TEMP SWITCH SY241-VTP-TC-401			300	HEAT TRACING		7	15A	15A	8		SY241-VTP-ENCL-400 DUCT HEATER CONT CAB HEATER		800		SY241-VTP-HTR-400
STACK MONITOR CABINET		500		SY296-VTP-ENCL-602 PRESS/FLOW XMTR AND CONTROLLER		9	15A	20A	10		SY296-VTP-ENCL-601 (SY296-VTP-HTR-601 AND HEAT TRACE)	1200			SY296-VTP-AC-601 IN SY296-VTP-ENCL-602
STACK MONITOR CABINET			400	SY296-VTP-ENCL-602 INSTR, HORN		11	20A	20A	12		SY296-VTP-ENCL-602		1200		SY296-VTP-HTR-602 AND SY296-VTP-AC-602
		–		SPACE		13			14		SPACE	–			
				MAIN BREAKER		15	50A		16		SPACE		–		
									18		SPACE	–			
SUBTOTAL		730	2500								SUBTOTAL	2420	2300		

TOTAL WATTS PHASE A: 3150
TOTAL WATTS PHASE B: 4800
TOTAL: 7950

Task# WRPS-PER-2008-0167.43

E-STARS[R] Report
Task Detail Report
07/08/2009 1040

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.43		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN in support of MCC-E-001 breaker replacement is released OR provide justification of breaker acceptability. Deli		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0167	**Due**	04/13/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/31/2008 1146	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Ensure ECN in support of MCC-E-001 breaker replacement is released OR provide justification of breaker acceptability. Deliverable: Electronic copy of released ECN or written justification in comments section of corrective action to document breaker acceptability. Reference: Issue 8.1.14 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 04/09/2009 1350 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/09/2009 1515 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.43 CLOSURE E-MAIL DISPOSITION.msg

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 04/09/2009 1350
	Completed
	Corrective action WRPS-PER-2008-0167.43 required that either an ECN to support MCC-E-001 breaker replacement be released OR to provide justification of breaker acceptability. Engineering has reviewed this issue and verified based on a field walkdown that the leads are landed to the motor via split-bolt connectors (which are part of the motor manufacturing process). As there are no lugs, the question of lug temperature rating is moot and the issue should be considered closed. The wire between the safety switch and the motor is the same as the wire upstream of the safety switch thus it is in compliance with the 75 deg C requirement.

Task# WRPS-PER-2008-0167.43

	Hence no ECN changes are required, and the existing breaker is acceptable. The e-mail message from the electrical system engineer documenting this resolution is attached as objective evidence. The PER originator has declined notification in the disposition		
Poster	Knight, Mark A (Bragg, David A) - 04/09/2009 1515		
	Concur		
	Engineering has evaluated this issue and determined that the breaker does not require replacement. An e-mail from the electrical system engineer is attached as objective evidence. The PER originator has declined notification in the disposition of WRPS-PER-2008-0167.43.		
Poster	^PER CAs (Owen, Annette) - 04/09/2009 2027		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	04/13/2009 0000
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Message

From: Nelson, Richard E

Sent: Thursday, April 09, 2009 1:30 PM

To: Bragg, David A

23		8.1.14	WO-08-0002	YES	5/18/09	Verify lugs on the T-1 transformer are rated for 75° C. Then accept or replace breaker in MCC-E-001 cubicle 01.	Visual inspection of the K1-5-3 motor at 242-S this morning confirms the leads are landed to the motor via split-bolt connectors (which are part of the motor manufacturing process). As there are no lugs, the question of lug temperature rating is moot and the issue should be considered closed. The wire between the safety switch and the mot thus it is in compliance with the 75 deg C requirement

Task# WRPS-PER-2008-0167.44

E-STARS[R] Report
Task Detail Report
07/08/2009 1041

TASK INFORMATION			
Task#	WRPS-PER-2008-0167.44		
Subject	WRPS-PER-2008-0167; RES; Ensure ECN in support of Work Package TFC-WO-08-2319 (to replace 125A BKR-104 with a 100A breaker) is released. Deliverabl		
Parent Task#	WRPS-PER-2008-0167	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0167	**Due**	05/19/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	12/31/2008 1146	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Ensure ECN in support of Work Package TFC-WO-08-2319 (to replace 125A BKR-104 with a 100A breaker) is released. Deliverable: Electronic copy of released ECN. Reference: Issue 8.1.15 SY Farm RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Rick E - Assign - Completed with comments - 04/09/2009 1316 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 04/09/2009 1605 *Instructions:*	

ATTACHMENTS

Attachments	1. DNFSB Electrical Letter Attachment.pdf 2. DNFSB Electrical Letter.pdf 3. Link to PER 4. RE_ WRPS-PER-2008-0167 _RES_.msg 5. WRPS-PER-2008-0167 EVENT & CAUSAL FACTORING CHART.pdf 6. WRPS-PER-2008-0167.44 CLOSURE ECN-726128-R0.pdf

COMMENTS

Poster	Nelson, Rick E (Bragg, David A) - 04/09/2009 1316
	Completed
	The required action was completed with the release of ECN-726128-R0 which provides the configuration changes required to replace the existing wire with wire that is rated for 125 amps. This action complies with NEC code requirements and is equivalent to/better than replacing the 125 amp breaker with a 100 amp breaker for wiring rated to 95 amps. The resolution provides wiring rated for 125 amps for service with a 125 amp breaker. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.

Task# WRPS-PER-2008-0167.44

Poster	Knight, Mark A (Bragg, David A) - 04/09/2009 1605		
	Concur		
	The required action was completed with the release of ECN-726128-R0. The subject ECN is attached as objective evidence. The PER originator has declined notification in the disposition of corrective actions associated with WRPS-PER-2008-0167.		
Poster	^PER CAs (Owen, Annette) - 04/09/2009 2038		
	CLOSED		
	Closure statement and attached documentation are adequate to close this action.		
TASK DUE DATE HISTORY			
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	05/19/2009 0000
Modified	12/31/2008 1146 - ^PER CAs	**New Due Date**	10/03/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

S

ENGINEERING CHANGE NOTICE

☐ DM ☒ FM ☐ TM

1a. ECN 726128 R 0

1b. Proj. ECN N/A - - R

2. Simple Modification	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)		4. Date
☒ Yes ☐ No			1/19/2009
5. Originator's Name, Organization, MSIN, & Phone No. Scott Norman, Fowler LLC/WRPS	6. PrHA Number No. 00653 R - 0 ☐ N/A	7. USQ Number No. - - - R - 6 TF-09-0222-D ☐ N/A	8. Related ECNs N/A
9. Title SY271-EDS-XFMR-100 Primary Conductor Replacement	10. Bldg. / Facility No. 241-SY-271	11. Equipment / Component ID SY271-EDS-XFMR-100	12. Approval Designator N/A
13. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.) 14 mw 2116109 H-2-030031, Sheet 1 Rev. 13		14. Safety Designation ☐ SC ☐ SS ☒ GS ☐ N/A	15. Expedited/Off-Shift ECN? ☐ Yes ☒ No
16a. Work Package Number	16b. Modification Work Completed Responsible Engineer / Date	16c. Restored to Original Status (TM) N/A Responsible Engineer / Date	17. Fabrication Support ECN? ☐ Yes ☒ No

18. **Description of the Change** (Use ECN Continuation pages as needed)

PROBLEM: The existing #2awg primary conductors supplying power to 50kVA transformer SY271-EDS-XFMR-100 are rated at 95A @ 60deg. C, and are not adequately protected from overcurrent by upstream breaker BKR-104, rated at 125A in SY271-EDS-MCC-001.

SOLUTION: Replace existing #2awg conductors with #1/0awg conductors that are rated 125A @ 60deg. C per NEC table 310.16.

ANALYSIS: The new conductors will be UL listed and approved and there will be no additional electrical loads. Per NEC 240.3 and 450.3(B) a 125A main breaker and #1/0awg conductor supplying power for transformer SY271-EDS-XFMR-100 will provide overcurrent protection of the transformer primary conductors, and also provide adequate distribution panel protection.

19. **Justification of the Change** (Use ECN Continuation pages as needed)

Engineering Rework ☐ Yes ☒ No
Training Impact ☐ Yes ☒ No

Replacing the existing primary conductors with a higher amperage rated conductor will provide the necessary overcurrent protection of the supply conductors per NEC. This ECN provides the design media necessary to correct the deficiency identified in RPP-RPT-38265 item 8.1.14 and 8.1.15 of SY farm. The probability of accident, consequences, or margin of safety for the facility worker is not impacted.

20. **ECN Category**

☐ Direct Revision
☒ Supplemental
☐ Void/Cancel

ECN Type

☐ Supersedure
☐ Revision

21. **Distribution**

Name	MSIN	Name	MSIN
RE Nelson	S5-07		
KL Ewer	S5-07		
MA Roberts	S5-07		

Release Stamp

FEB 19 2009
DATE:
STA: 4
HANFORD RELEASE
ID: 58

ENGINEERING CHANGE NOTICE	1a. ECN 726128 R 0
Page 2 of 3 ☐ DM ☒ FM ☐ TM	1b. Proj. ECN N/A - - R

22. Revisions Planned (Include a brief description of the contents of each revision)

N/A

Note: All revisions shall have the approvals of the affected organizations as identified in block 12 "Approval Designator," on page 1 of this ECN.

23. Commercial Grade Item Dedication Numbers (associated with this design change)

N/A

24. Engineering Data Transmittal Numbers (associated with this design change, e.g., new drawings, new documents)

N/A

25. Other Non Engineering (not in HDCS) documents that need to be modified due to this change

Type of Document	Document Number	Update Completed On	Responsible Engineer (print/sign and date)
Alarm Response Procedure	N/A		
Operations Procedure	N/A		
Maintenance Procedure	N/A		

26. Field Change Notice(s) Used?

☐ **Yes** ☒ **No**

If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 18, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. Design Verification Required?

☐ **Yes** ☒ **No**

If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. Approvals

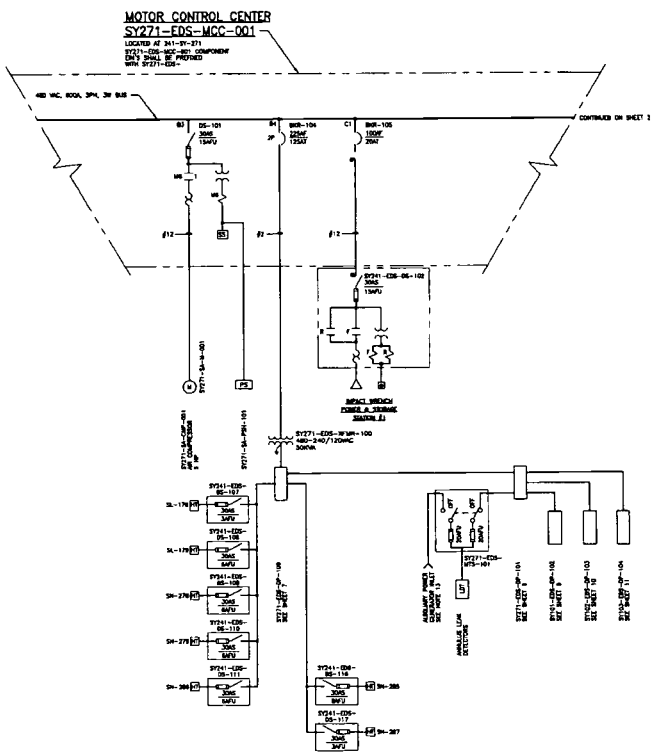
Facility/Project Signatures		Date	A/E Signatures		Date
Resp. Engineer	RE Nelson	1/26/09	Originator/Design Agent	SA Norman	1/20/09
Resp. Manager	MA Roberts FOR MARK Roberts	2/12/09	Professional Engineer		
Quality Assurance			Project Engineer		
IS&H Engineer			Quality Assurance		
NS&L Engineer			Safety		
Environ. Engineer			Designer		
Engineering Checker	KL Ewer Kenneth L. Ewer	1/20/2009	Environ. Engineer		
Other			Other		
Other			Other		
Other			DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other			Signature or a Control Number that tracks the Approval Signature		
Other					
Other			ADDITIONAL SIGNATURES		
Other					
Other					

WRPS ENGINEERING CHANGE NOTICE CONTINUATION SHEET	☐ DM ☒ FM ☐ TM	1a. ECN-726128-R0
Page 3 of 3		1b. Proj. ECN N/A

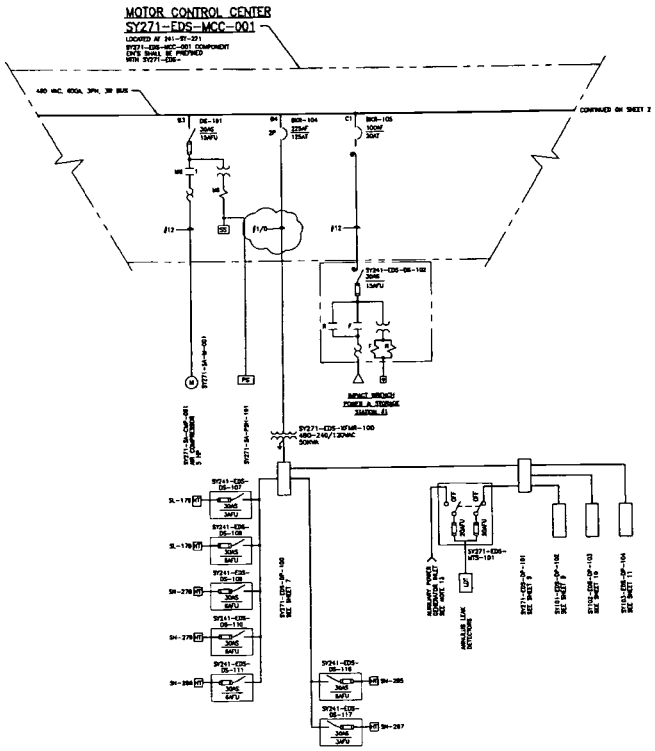
Document/Drawing No. H-2-030031 Sheet 1 Revision 13

(Note: A separate ECN Continuation page shall be used for each document/drawing to be modified.)

WAS:



IS:



A-6003-565 (01/03)

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0181
Closed 11/07/2008 09:15

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0181	11/04/2008	14:30	Day Ops-W

Location

SX Farm

How Was Problem Discovered

Radiological Surveys

Description of Concern or Problem

While performing perimeter surveys of S/SX farms per task COF-W003 contamination was discovered. Contamination was found at several locations along the perimeter, the highest levels were at the SW corner of SX farm, the contamination at this location appeared to be rabbit poop, and was reading 10 mRad W/O, no detectable alpha. See survey #COF-009261 for further information.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification
n/a	

Immediate actions Taken or Planned

Notified Radcon FLM and Shift operations manager, guarded areas until operations picked up and disposed of contamination.

Recommended Corrective actions

Locate source of contaminated vegitation.

Originator Contact

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Robillard, Donna L	H0091107	(509) 373-3353	11/05/2008

SHIFT OPERATIONS REVIEW

Title

Contaminated Rabbit Droppings Outside S and SX Farms

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

Contamination was cleaned up and disposed of properly. No additional Base Ops Shift Office actions required at this time.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Gilles, Dave	H0017731	(509) 373-2689	11/05/2008

SCREENING

PER Significance Level	
Trend Only	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Brannan, Patrick (Brad)			

Program	Safety Management Program
• **N/A**	• **N/A**

PER Screening Comments			
Fluor Hanford has the responsibility for determining the source of the contamination. (Nancy Brown 11/06/08)			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Radiation Protection	• Radiological Contamination Control
ISMS	**Consequence Code**		
Develop and implement hazard controls	• Contam - Legacy - Discovery of contamination from past practices or spills in soil, animal, or vegetation		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/06/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/06/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/07/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/7/08			
Instructions for Responsible Manager			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Owen, Annette	H0054042	(509) 372-0533	11/07/2008
ATTACHMENTS			
Link to PER			

-- End of Report --
11/07/2008 09:15 AM

Task# WRPS-PER-2008-0181			
E-STARS[R] Report Task Detail Report 11/07/2008 0915			
TASK INFORMATION			
Task#	WRPS-PER-2008-0181		
Subject	Trend; Contaminated Rabbit Droppings Outside S and SX Farms		
Parent Task#		Status	CLOSED 11/07/2008
Reference		Due	11/07/2008
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2008 1303	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Gilles, Dave) - Review - Concur - 11/05/2008 1650 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/06/2008 1546 *Instructions:*		
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/07/2008 0814 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER		
COLLABORATION			
COMMENTS			
No Comments			
TASK DUE DATE HISTORY			
Modified	11/05/2008 1303 - ^PER Coordinator	New Due Date	11/07/2008 1630

Task# WRPS-PER-2008-0181
SUB TASK HISTORY
No Subtasks
-- end of report --

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0182
Closed 04/29/2009 12:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0182	11/04/2008	15:50	Day Ops-W

Location

S Farm

How Was Problem Discovered

Arriving to or Leaving from Work

Description of Concern or Problem

When leaving the work area of S perimeter, several rabbit droppings with high levels of contamination were found near the south side of the 242-S evaporator parking lot. The highest levels found were 28 mRad beta/gamma, 499dpm alpha. Area documented on survey #COF-009261.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification
N/A	

Immediate actions Taken or Planned

Notified Radcon FLM and shift operations manager, guarded area until operations could establish HCA postings.

Recommended Corrective actions

Performa a detailed radiological survey of the surrounding area to determine extent and source of the contamination, followed by a rigorous Elmer Fudd type hunt for the offending bunny.

Originator Contact

I would like to help in investigating the cause

Originators Name	Originators ID	Originators Phone	Date Initiated
Snyder, Melissa D	H0002921	(509) 373-9047	11/05/2008

SHIFT OPERATIONS REVIEW

Title

Contaminated Rabbit Droppings 242S Parking Lot

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

Area was posted correctly. Proper notifications have been made. No additional Base Ops Shift Office actions required at this time.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Gilles, Dave	H0017731	(509) 373-7360	11/05/2008

SCREENING

PER Significance Level	
TUF	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Ficklin, Jim			

Program	Safety Management Program
• **N/A**	• **N/A**

PER Screening Comments			
No comments (Nancy Brown 11/06/08)			
Causal Code			
A7B2C01	Other Problem Radiological/Hazardous Material Problem Legacy contamination		
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Radiation Protection	• Radiological Contamination Control
ISMS	**Consequence Code**		
Develop and implement hazard controls	• Contam - Legacy - Discovery of contamination from past practices or spills in soil, animal, or vegetation		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/06/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/06/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/07/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/7/08			
Instructions for Responsible Manager			
Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Owen, Annette	H0054042	(509) 372-0533	11/07/2008
Track Until Fixed (TUF)			
Action Taken			
Rabbit droppings were cleaned-up, area decontaminated, and area downposted via CHAMPS work order TFC-WO-09-0013 on 4/28/09.			
ATTACHMENTS			
Link to PER			
WRPS-PER-2008-0182 Contaminated Rabbit Droppings 242S Parking Lot email.msg			
WRPS-PER-2008-0223_ WRPS-PER-2008-0182_ S Farm Contamination Issues.msg			
AUDIT HISTORY			

Change Date	Auditor	Comments
11/07/2008 08:15	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
04/29/2009 12:45 PM

Task# WRPS-PER-2008-0182			
E-STARS[R] Report Task Detail Report 04/29/2009 1245			
TASK INFORMATION			
Task#	WRPS-PER-2008-0182		
Subject	TUF; Contaminated Rabbit Droppings 242S Parking Lot		
Parent Task#		Status	CLOSED 04/29/2009
Reference		Due	04/30/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/05/2008 1410	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.		
	• Ficklin, Jim - Assign - Completed with comments - 04/29/2009 1243 *Instructions:*		
	• Ficklin, Jim - Assign - Withdrawn - 03/02/2009 1030 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
	• Ficklin, Jim - Close - Closed - 04/29/2009 1244 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window. Verify the TUF Tab and close the task when complete		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Gilles, Dave) - Review - Concur - 11/05/2008 1647 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/06/2008 1548 *Instructions:*		

Task# WRPS-PER-2008-0182			
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/07/2008 0815 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER 2. WRPS-PER-2008-0182 Contaminated Rabbit Droppings 242S Parking Lot email.msg 3. WRPS-PER-2008-0223_ WRPS-PER-2008-0182_ S Farm Contamination Issues.msg		
COMMENTS			
Poster	^PER Coordinator (Owen, Annette) - 03/02/2009 1030		
	Extend to 4/30/09 per attached e-mail request.		
	Please extend these PER's until 4/30/09. This work will be added to the April 16-31 campaign schedule. It will continue to remain a target of opportunity prior to those dates, however should HPT resources become available.		
Poster	Ficklin, Jim - 04/29/2009 1243		
	Completed		
	Corrective actions complete; see updated PER. Copy of e-mail to PER originator attached to TDR.		
TASK DUE DATE HISTORY			
Modified	03/02/2009 1031 - ^PER Coordinator (Owen, Annette)	New Due Date	04/30/2009 1630
Modified	11/07/2008 0815 - ^PER Coordinator	New Due Date	03/09/2009 1630
Modified	11/07/2008 0815 - ^PER Coordinator	New Due Date	03/05/2009 1630
Modified	11/05/2008 1410 - ^PER Coordinator	New Due Date	11/07/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Message

From: Ficklin, James W (Jim)

Sent: Monday, March 02, 2009 9:44 AM

To: ^WRPS Corrective Action Group

Cc: Tucker, Ronald P; Marshall, Robert P Jr; Carrothers, Bradley M

Subject: WRPS-PER-2008-0223, WRPS-PER-2008-0182: S Farm Contamination Issues

Please extend these PER's until 4/30/09. This work will be added to the April 16-31 campaign schedule. It will continue to remain a target of opportunity prior to those dates, however should HPT resources become available.

Thanks.

j.

Melissa,

This area was cleaned & downposted on 4/28/09. I am closing my E*Stars action & the PER. Please see updated PER for details.

Thanks!

j.

washington river protection solutions

INTEROFFICE MEMORANDUM

WRPS-0800028

Date: October 9, 2008

To: R. L. Brown

From: F. Beranek, Manager, Environment, Health, Safety & Quality Assurance

Subject: TEAM CHARTER FOR CAUSE ANALYSIS OF CIRCUMSTANCES SURROUNDING RECENT TANK FARM CRANE OPERATIONS PROBLEM EVALUATION REQUESTS

You are assigned to lead a Root Cause Analysis team for issues identified in problem evaluation requests (PER) associated with tank farm crane operations. The cause analysis should focus primarily on the recent events related to tank farm crane operations as identified in CH2M-PER-2008-0723, 2008-0835, 2008-1091, 2008-1295, and 2008-1891. These PERs indicate tank farm crane operations are less than satisfactory and a Root Cause Analysis is needed. Specific attributes associated with human performance considerations, such as error-likely situations, error traps, and error precursors, are to be included. Specifically, your analysis should:

- Determine whether these incidents are isolated human performance events or organizational and programmatic issues.
- Determine the actual causes of the events.
- Determine the extent of condition of the causal factors.
- Determine the corrective actions needed to prevent recurrence.
- Evaluate the effectiveness of the corrective actions taken for any recurring events.

The following individuals have been assigned to the Root Cause Analysis team.

R. E. Butler	Construction and Commissioning
T. F. Kramer	Safety Specialist, Industrial Safety
T. C. Mackey	Engineer, Central Design Authority & Standards
C. A. Meldrom	Work Management and Integration, Base Operations
D. L. Morgan	Crane and Rigging, Fluor Hanford
D. P. Niebuhr	Field Work Supervisor, Base Operations
J. S. Rodriquez	HAMTC Safety Representative, Base Operations
M. J. Silvia	Specialist, Performance Assurance/Corrective Action

The performance of the analysis and final product are to be in accordance with TFC-ESHQ-Q_ADM-C-11, *Root and Common Cause Analysis and Corrective Action Planning*. Should you find you need any additional resources, please advise me immediately. Although the thoroughness of your analysis is most important, you should target your submittal date to be no later than November 3, 2008.

Brief me each week as your investigation progress.

Should you have any questions, please contact me at 372-9117.

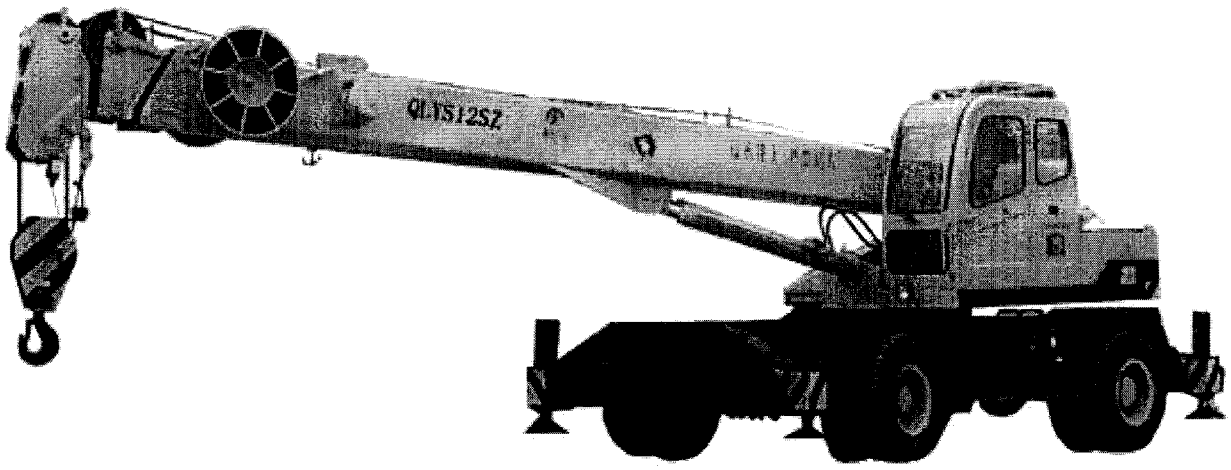
RLB:EEW

cc: L. J. Alcala
H. S. Berman
M. N. Brosee
R. E. Butler
W. L. Gaydosh
T. F. Kramer
E. M. LaRock
K. F. Lesko
M. A. Lindholm
C. Maciuca
T. C. Mackey
C. A. Meldrom
D. L. Morgan
E. A. Nelson
D. P. Niebuhr
C. W. Peoples
J. S. Rodriquez
S. M. Sax
D. L. Shugars
M. J. Silvia
D. T. Tuckness
File

RECEIVED
OCT 10 2008
WRPS
CORRESPONDENCE CONTROL

washington river protection solutions

Causal Analysis Report
January 2009
Series of Events Involving
Hoisting and Rigging Equipment



Team Lead	_____	Date_____
	Bob Brown, Root Cause Analyst	
Responsible Manager	_____	Date_____
	Fred Beranek, Manager, ESH&Q	
Executive Safety Review Board	_____	Date_____
	President and Project Manager	

Casual Analysis Team:

Bob Brown	Team Lead
Dana Morgan	Chairman, Hanford Hoisting and Rigging Committee
Al Meldrom	Base Operations
Tom Mackey	Engineering Standards
Ralph Butler	URSWD Safety
Tim Kramer	Safety Hoisting and Rigging Lead
Dan Niebuhr	Field Work Supervisor

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Attachment G: Why Analysis Flow Charts 1

AJRG	-	ALARA Joint Review Group
CH2M	-	CH2M HILL Hanford Group, Inc
DL	-	Designated Lead
FFS	-	Fluor Federal Services
FH	-	Fluor Hanford
FLM	-	First Line Manager
FWS	-	Field Work Supervisor
H&R	-	Hoisting and Rigging
HPI	-	Human Performance Improvement
HSHRM	-	Hanford Site Hoisting and Rigging Manual
JRG	-	Joint Review Group
LMI	-	Load Moment Indicator
LTA	-	Less Than Adequate
MRT	-	Mobile Retrieval Tool
OJT	-	On-the-Job Training
PER	-	Problem Evaluation Request
RadCon	-	Radiological Control
SME	-	Subject Matter Expert
SMP	-	Safety Management Program
SOW	-	Statement of Work
SSW	-	Senior Supervisory Watch
TOC	-	Tank Operations Contractor
WGI	-	Washington Group International, Inc
WRPS	-	Washington River Protection Solutions

1.0 EXECUTIVE SUMMARY

In 2008 a series of events involving mobile cranes or hoisting equipment occurred that prompted a management review of crane and rigging activities, culminating in the establishment of a team to perform a causal analysis on the events. The events addressed In this report are:

- April 6, 2008, a load dropped approximately 18 inches while suspended
- April 16, 2008, a mobile crane was taken out of service during a work activity due to malfunction
- May 16, 2008, a jib hoist, taken out of service due to electrical issues was returned to service without testing and subsequently failed load tests
- September 21, 2008, a mobile crane underwent an abrupt and uncontrolled boom retraction resulting in a load to drop while suspended.

A more detailed discussion of each event is contained in Attachment A, Event Summaries.

The analysis of the events revealed weaknesses in the performance of hoisting and rigging operations at tank farms. Serious weaknesses in crane maintenance and crane operator training were significant causal factors in several of the events. Other weaknesses identified by the Tank Operations Contractor (TOC) include field recognition of hazards, response to events, and event investigations.

While deficiencies have been identified and opportunities for improvement exist, crane operations at tank farms are fundamentally safe, based in part on actions completed by both Fluor Hanford (FH) and the TOC. Continued management focus on program improvement is necessary to maintain a safe program and restore confidence in hoisting and rigging operations.

The work pace established during the period of the events (April to September) was accelerated. This was based on incentives at the company (Performance Based Incentives) and employee (significant amounts of overtime) level. Management pushed extremely hard to achieve the company objectives. The workers in the field performed the work on extended shifts and overtime in an effort to meet these difficult expectations. The collective drive to complete fee based projects was the dominant focus during the last months of the contract period.

In this atmosphere decisions were made that emphasized production over safety. There is no indication this was a deliberate effort.

The corrective actions are designed to strengthen the decision making processes to ensure the processes are robust and less susceptible to management pressures in high stress situations.

Throughout the period of the causal team's work, both Washington River Protection Solutions (WRPS) and Fluor Hanford (FH) have demonstrated a commitment to acting on identified issues and resolving them as they arise.

1.1 Events

A summary of the events addressed in this report is contained in Attachment A, Summary of Events.

1.2 Process

Each of the events was evaluated individually with a new time line, follow-up interviews, and causal analysis performed to determine root, direct, and contributing causes. The causal factors were coded and the codes grouped and analyzed by category. This information was used to identify common causes. Where deemed significant, Human Performance Indicators (HPI) were evaluated and considered when determining common causes

An evaluation of extent of condition, safety significance, and generic implications was performed based on the available information and corrective actions were developed by the team based on both the causal factors noted in the individual event analysis and the common cause analysis.

This process was not a comprehensive assessment of the entire crane and rigging program. The level of investigation performed was to augment or clarify existing event investigations.

1.3 Recommendations

In addition to the corrective actions identified, an addition recommendation was developed that is not based on any single failure or event but reflects a process improvement.

The current procedure set in use at tank farms contains scattered references to crane and rigging criteria. A clearer approach that should be considered is the development of a single safety standard for TOC that captures all TOC specific crane and rigging criteria that goes beyond the Hanford Site Hoisting and Rigging Manual.

Such a standard would be consistent with other programs within the safety organization and would strengthen the program consistent with ISMS Guiding Principle five, Identification of Safety Standards and Requirements.

While the standards and requirements are defined, the lack of a cohesive single TOC contractor standard is a less than optimal method for defining the standards.

1.4 Common Causal Factors

The following causal factors were identified as Common Causes of the events. Corrective actions are listed in section 1.5, Recommended Corrective Actions, below. The alignment between causal factors and corrective actions is contained in section 2.4.3, Corrective Action and Causal Factor Alignment.

- Common Cause 01 (A3B2C02) Signs to stop were ignored and steps performed incorrectly
- Common Cause 02 (A2B2C01) Preventive maintenance for equipment Less Than Adequate (LTA)
- Common Cause 03 (A2B2C03) Corrective maintenance for equipment LTA
- Common Cause 04 (A6B1C02) Training requirements not identified
- Common Cause 05 (A5B2C08) Written communication content LTA, incomplete/situation not covered
- Common Cause 06 (A4B4C05) Emphasis on schedule exceeded emphasis on methods/doing a good job
- Common Cause 07 (A4B1C04) Management follow-up or monitoring of activities did not identify problems

1.5 Recommended Corrective Actions Within WRPS

As noted in subsequent sections, several actions were taken by both WRPS and by FH to address issues noted by the causal analysis team. The actions below represent corrective actions limited in scope to WRPS.

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-02
Perform a documented review of all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

CC-CA-03
Revise TFC-BSM-TQ-STD-18, *Hoisting and Rigging Training Program Description,* to ensure subcontractor crane operator training is commensurate with

FH crane operator training requirements developed as a result of the training assessment.

CC-CA-04
Formally communicate to all subcontractors with existing contracts for performing crane operations in tank farms of the changes to TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging*, generated as a result of corrective actions in this report.

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0, to clarify entry criteria, emphasize hazard recognition, and modify subsequent sections based on any modifications to entry criteria.

CC-CA-07
Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

CC-CA-08
Provide and document specific training for Field Work Supervisor (FWS), Senior Supervisory Watch (SSW), and Shift manager qualified staff on changes made to TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition.*

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen Problem Evaluation Request (PERs) to include identifying a Safety Management Program (SMP) owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-CA-10
SMP Subject Matter Expert (SME) for hoisting and rigging review FH Management Assessment of Fleet Maintenance for potential impacts to TOC and document review to the Manager, Safety and Health.

EPA-01

Perform an end point assessment of the corrective actions identified in this report that address the completion and effectiveness of corrective actions. The assessment will include corrective actions identified for WRPS and completion of planned actions by FH.

1.5.1 Actions by WRPS

The following is a list of actions taken by WRPS during the course of the analysis:

1. Issued Lessons Learned IB-08-048, *Clarification of Expectation for Crane Functional Check.*
2. TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging* has been modified to reflect functional check criteria contained in lessons learned IB-08-048.
3. Shift office red arrow log entry requiring HRB approval for all mobile crane work as an interim measure until applicable procedures are modified.
4. Shift office red arrow log entry limiting the use of the 90 ton crane pending evaluation.
5. Restricted the use of mobile cranes until a full length wire inspection was completed.
6. Revised TFC-ENG-FACSUP-C-25 to require critical lift designations for lifts at or above 90% of a crane load chart rating.
7. Reviewed WRPS construction crane operator qualifications to assure compliance with all provisions of DOE-RL-92-036, *Hanford Site Hoisting and Rigging Manual.*
8. Subcontractor crane operators have been briefed on Load Moment Indicator (LMI) error codes and expected responses.
9. Modified TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging,* to require that any reconfiguration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) Be overseen by a designated representative of the equipment custodial company/organization.
10. Initiated a change to TFC-OPS-OPER-C-10, *Vehicle and Dome Load Control in Tank Farm Facilities,* to define minimum criteria for crane configuration and movement while in tank farm facilities, specifically addressing minimum number of spotters, tie-down length, and crane configuration.
11. Obtained an authorization basis review of the potential impact on TOC SMPs relative to the slip stick phenomenon.

1.5.2 Actions by Fluor Hanford

Fluor Hanford Crane& Rigging Services investigates all crane operation anomalies and makes changes to the crane maintenance program. Members of the Crane & Rigging Staff have participated as a part of the TOC causal analysis team. The significant changes completed over the last year and in progress (including the specific actions from the TOC review) are listed below:

1. Provided a briefing on thermal hydraulic stick-slip phenomenon to FH and WRPS (construction) crane operators.
2. Full-length wire rope inspections were performed on all mobile cranes.
3. Hook tie-back slings were verified to have been shortened to minimize the likelihood of snagging equipment inside tank farms.
4. Evaluated existing procedures for crane inspections against criteria contained in DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual.
5. Monthly and Annual Mobile Crane Inspections have been split into separate maintenance procedures. The 7-GN-068 procedure is the Monthly Mobile Crane inspection and 7-GN-179 is now the corresponding Annual Mobile Crane inspection procedure.
6. A caution review paper on temperature effects on hydraulic cylinders was reviewed by all crane operators. This information has been placed in the cab of RT890 Grove 17T-5690 (90 ton) and RT875 Grove 17T-5688(75 ton) cranes.
7. FH Crane operators have been briefed on the criteria for operators to place out-of-service tags on the crane when issues requiring maintenance are required. Procedures and tags have been provided in the cranes.
8. A management assessment of fleet maintenance practices has been initiated.
9. Crane operators have been briefed on LMI error codes and expected responses.
10. A proposed change has been submitted to the Hanford Site Hoisting and Rigging Committee to change the *Hanford Site Hoisting and Rigging Manual* to require performance of a full functional and operational test of cranes after setting the crane up to make a lift.
11. Crane rental agreements in the future will reflect the change for contractors to require that any reconfiguration of a crane (e.g., installation or removal of a jib, new wire rope configuration, removal of load block/hook or headache ball, etc.) must be overseen by a designated Fluor Hanford Crane & Rigging representative.
12. A four day training seminar on LMI Systems was conducted for Fleet Mechanics who work on the computer systems on newer cranes.
13. An Assessment of current LMI training and Evaluation process of mobile Crane operators will be performed by FH Training with technical support of FH Site Crane & Rigging Services.

14. Fleet Services reviewed lubrication points on the 90 ton and 75 ton Grove crane with the Grove Manufacture and the missed lubrication points greased. The lubrication procedures for these cranes were revised.
15. The Grove Manufacture has provided Crane & Rigging Services and Fleet Services staff documentation and a briefing on the "slip stick" phenomena that is caused by thermal contraction of the oil systems in cranes.
16. A Fluor Hanford Just-In-Time Report on the 90 Ton Grove Crane Boom Slip Stick phenomenon is in development and will be issued to all FH crane operators.
17. The Mobile Crane Rental Fleet Department Process Instruction (DPI) and 7-GN-097 Frequent Inspection of Mobile Cranes procedure will be placed in each crane.
18. The service manual for each mobile crane is being reviewed. The end result will be a crane specific annual inspection and lubrication sheet.

Crane operations are considered critical operations for Fluor Hanford. For the most part the changes listed above are focused on a specific part of the Mobile Crane Maintenance Program. In addition to these focused changes, several overall program initiatives will be implemented.

1. A Mobile Crane Hoisting and Rigging Compliance Matrix will be developed for the Mobile Crane Inventory operated by Crane & Rigging Services. This matrix will be a cross walk between the maintenance requirements found in the Hoisting and Rigging Manual and the implementing procedures used for conducting the required maintenance.
2. A Mobile Crane Operating Manual Maintenance Matrix will be developed for the mobile crane inventory. This matrix will be a cross walk between the maintenance requirements found in the each Crane Operating Manual and the implementing procedures used for conducting the required maintenance.
3. A crane operating anomaly response guide will be developed to provide consistency in response actions to crane operating issues.
4. Mobile cranes are rented by construction services for various tasks on the site. The rental process will be reviewed to ensure that Crane & Rigging Services expectations for crane operation are adequately communicated to the organizations renting the cranes.
5. A review will be conducted of the training and qualification programs utilized for both crane operators and crane mechanics. Included will be reviews of how special topics are delivered and documented by vendors on both old and new equipment.

2.0 COMMON CAUSE ANALYSIS

2.1 Analysis

The common cause analysis was done by reviewing the causal codes and breaking into categories based on the event causal tree. As shown, the leading causes are equipment, human error, and communications.

Other factors and commonalities were evaluated as follows

- Four of the five events involved construction subcontractors operating mobile cranes or using hoisting or rigging equipment at TOC facilities.
- Three of the five events involved Closure Operations. In the one event involving Base Operations, the SSW recognized the event and secured operations. One event, taking place in a shop, resulted in ownership of the shop being assigned to Base Operations, but prior to this the shop had been undefined in terms of responsibility and work being performed in support of Closure Operations.
- Four of the five events included inadequate maintenance, repair, or inspection as a causal factor.
- In four of the five events, work continued after procedure or training should have caused the activity to be suspended.
- In none of the events was an alternative crane available that could perform the function being done at the time of the event.
- Documented corrective actions, beyond immediate actions, were not launched for any of the events assigned.
- In one of the three events where an SSW was used, the SSW failed to stop work.
- In three of the five events, procedures or work documents were found to be lacking needed detail.
- In four of the five events, the persons involved in the event failed to recognize significance of the conditions being encountered.
- All events were performed under management pressure and were on overtime.
- In none of the events were interviews with personnel beyond the initial fact finding meeting documented.

2.1.1 Individual PER Causal Factors

From the thirty causal factors identified on the PERS, forty individual causal codes were developed. The figure below demonstrates the breakdown:

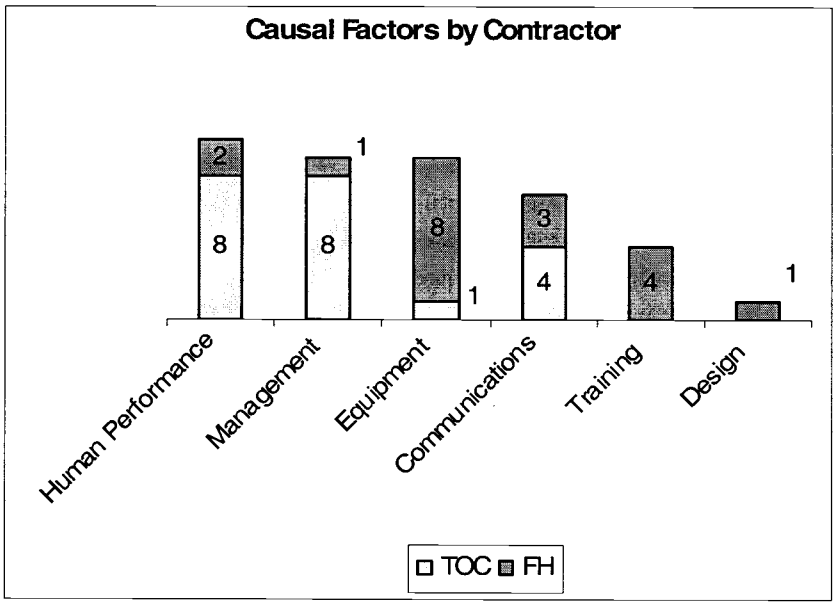

Figure 1: Causal Codes by Contractor

This chart effectively demonstrates the ownership of issues. FH is dominated by equipment and training issues; whereas the TOC has clear breakdowns in management and human performance.

2.1.1.1 Written Communications

Written communications fall into two categories, missing content, and unclear content.

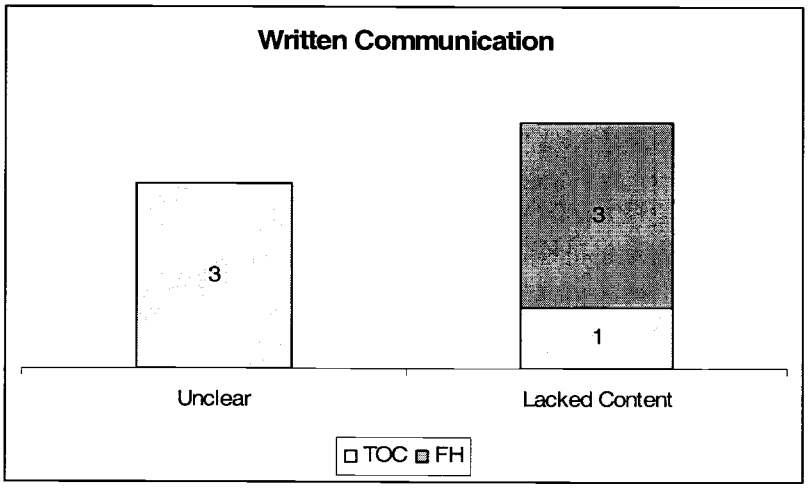

Figure 2: Written Communications

Examples of the issues noted with written communications are:

- Missing information in Crane Operator's Manual
- Inadequate wire rope inspection procedures
- Inadequate documentation of crane malfunctions
- Unclear entry criteria into TF-AOP-20
- Unclear criteria for event investigations.

2.1.1.2 Management Problems

The management problem category is almost solely dominated by the TOC. The causal factors identified as management problems fall heavily to management methods, and not resources or supervisory methods as shown below:

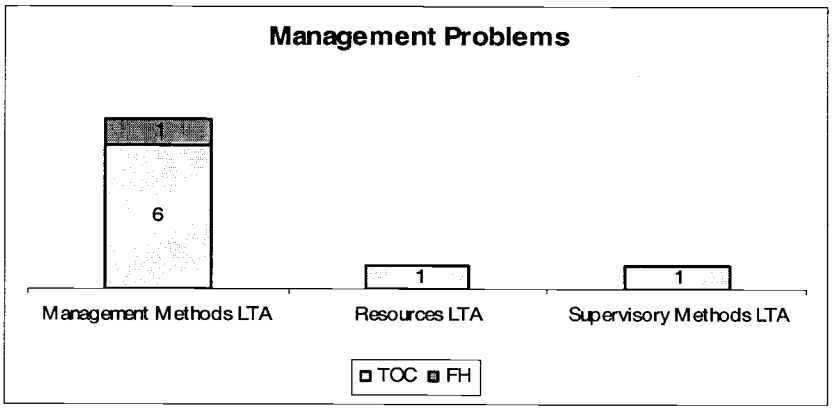

Figure 3: Management Problems

Examples of the management methods noted include:

- Significant management pressure to complete fee based projects
- Ineffective event investigations
- Lack of internal processes for returning equipment to service
- Ineffective subcontractor oversight
- Failure to recognize events as significant

2.1.1.3 Training

Training issues identified were limited to crane operators and fleet services managed mechanics. At the time of the events, neither craft had received documented training on the sophisticated computer systems contained on newer cranes. All training issues were within the FH scope.

2.1.1.4 Human Error

Human errors are the largest single contributor to the events noted, and knowledge based errors made one of the largest single contributors to the events. A knowledge based error

is essentially a problem solving error caused by an individual who may have the basic knowledge and skills to deal with a problem but is unaware of the rules or the error triggering event occurs in such a way that the person is not necessarily applying the knowledge and skills in a manner they might normally do. This type of error often occurs when a person has to "stop and think" about what to do. Some of the weaknesses noted in written communication above contributed to knowledge based errors in that effective rules were not in place and thereby forced persons into knowledge based situations.

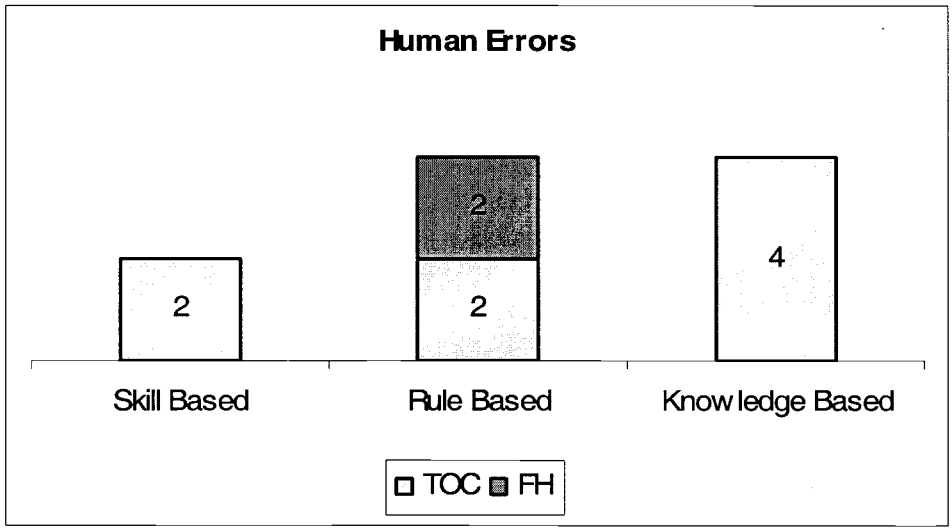

Figure 4: Human Performance

Examples of the human performance errors noted in the events included:

- Failure to stop and seek guidance when the wire rope configuration "looked wrong"
- Workers attempted infrequently performed activities without seeking sufficient guidance
- Failing to recognize a significance of an event or the hazards involved
- Workers failed to implement "stop work" authority
- Manager failed to recognize role of SME

2.1.1.5 Equipment Problems

Equipment problems contributed significantly the events noted. In most cases it was maintenance or inspection issues, but cases of defective or failed equipment were noted as well.

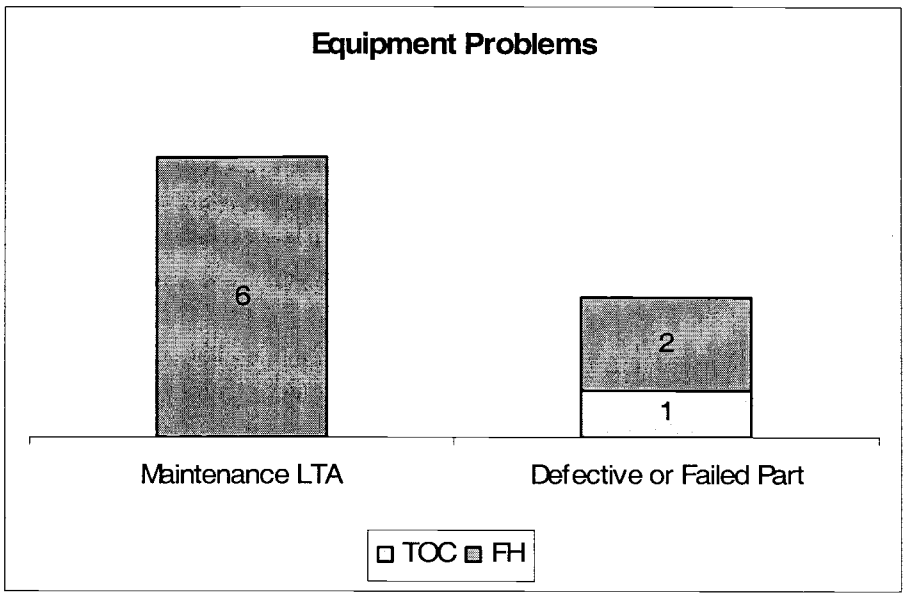

Figure 5: Equipment Problem

Examples of equipment problems noted include:

- Failure to perform or document inspections of full length of wire rope
- Placing 110 ton jib in service without required inspections
- Failure to perform required lubrications on crane
- Keeping a welding foot pedal in service though broken
- Practice of removing equipment cover from 90 ton crane to prevent electrical "shorting" of the potentiometer during operation.

2.2 Common Causes

The following reflect the common causes that dominated the events and if corrected will minimize the potential for recurrence.

2.2.1 Signs to Stop Were Ignored and Steps Performed Incorrectly (A3B2C02) (CC-01)

In all events work had progressed past the point where a workforce fully implementing existing procedures would have stopped work. In some cases a stop work would have prevented the event while in others it would have prevented continuing risk or minimized damage to the equipment. This is not limited to field activities but includes management involvement in events as well.

Across the organizations, there does not appear to be a uniform understanding of what constitutes an allowable work situation and what situations warrant stopping work and/or placing personnel in a safe location. This reflects a lack of effective hazard identification.

2.2.2 Preventive Maintenance for Equipment LTA (A2B2C01) (CC-02)

Several instances were identified where preventive maintenance and/or equipment inspections were not being performed completely, on all required components, or in accordance with the manufacturer's specified frequency.

- Eleven lubrication points on the 75 ton and 90 ton cranes were not greased
- Lubrication periodicity had been locally established at three months instead of the fifty hour of operation specified by the manufacturer.
- Wire rope inspections were not documented as being performed on the entire length of the wire rope.
- The jib for the 110 ton crane was installed, after being removed for several years, without receiving the inspections that would have been performed, had it been attached to the crane.

2.2.3 Corrective Maintenance for equipment LTA (A2B2C03) (CC-03)

A review of maintenance records and documentation for specific equipment repairs showed a recurrence of a previous finding documented in a Fluor Hanford Human Performance Indicators (HPI) Assessment dated March 9, 2008. Documentation of as-found condition, actions necessary to operate the equipment and repair activities is less than adequate. Entries in work records are very sparse and did not allow the reviewer to reconstruct the repair evolution.

Discussion with the FH Fleet Maintenance Services personnel indicated that a reduction in staff has contributed to this situation, as the current repair personnel are focusing more on the actual repair work than on complete documentation of the work performed.

- The 90 ton crane experienced repeated instances of a proximity switch failure over a period of months with inadequate and temporary corrective measures.
- Situations in which maintenance crafts responded to a field request without documenting maintenance performed.
- The maintenance technician who went into C farm to restore the 90 ton crane to operation after the uncontrolled retraction of the boom wrote the following in the maintenance record. *"Reset P.A.T. system and tested. Found wrong configuration and corrected."* This is a less than adequate description of the as found condition and actions taken.

2.2.4 Training Requirements Not Identified (A6B1C02) (CC-04)

There is wide variation in the level of knowledge and skills workers (e.g. crane operators and maintenance technicians) have as trained journeymen and those that should be

developed and evaluated through formal training. Complex and unusual situations, alarms and indications are encountered for which the worker has had no previous formal training, and for which previously acquired knowledge and experience does not completely apply. This leaves the worker in an error likely situation of uncertainty. Several of the incidents revealed weakness in identifying specific training needs, relative to the operation of mobile cranes.

- Maintenance technicians and crane operators had received limited, informal training on the newer, more sophisticated LMI computers on new cranes
- Crane operators currently are required to be evaluated on a class of cranes (i.e. telescoping boom, single control station mobile crane) and are not required to be evaluated for proficiency in operating a specific crane.
- Normal training on new cranes consists of an informal demonstration presentation by the vendor.
- Although some field crew personnel receive specific training on crane safety and working in proximity to crane operations, there is no general worker training module (e.g. Hanford General Employee Training) that addresses this.

2.2.5 Written Communication Content LTA, Incomplete/Situation Not Covered (A5B2C08)(CC-05)

Deficiencies with written manuals and procedures were identified. Examples include:

- The vendor provided crane operating manual was either lacking information or contained vague information in two of the six situations.
- There was no uniform process for returning a crane to service (with review and approvals by appropriate organizations) following a malfunction in the field or major repair.
- Awareness for the varied entry conditions for TF-AOP-20 is inconsistent across the TOC. This Abnormal Operating Procedure is generally viewed to be a procedure for dealing with radiological issues such as off-scale radiation readings, as evidenced by worker interviews, Tank Farms Orientation Training content and the priorities written within the procedure.
- Wire rope inspection procedures did not effectively communicate requirements, resulting in a missed requirement for full length inspection of the wire rope.
- PER screening procedure does not have a uniformly applied mechanism to direct the PER to the appropriate Safety Management Program SME for involvement in the disposition and closure of the PER.
- The Critique/fact finding procedure does not require SME involvement in fact findings. The procedure is vague on how to differentiate between

holding a fact finding and a critique and the observed tendency has been to perform a fact finding, as it is perceived to be less intimidating.

- There is no guidance in the fact finding/critique procedure that establishes how soon after the event to hold the fact finding/critique.

2.2.6 Emphasis on Schedule Exceeded Emphasis on Methods/Doing a Good Job. (A4B4C05)(CC-06)

There were numerous instances in these events where pressure to complete the job as quickly as possible was evident. Indications of this included:

- Mobile crane troubleshooting, repair, and return to service work was performed on a weekend without a full understanding of what had occurred.
- Four of five events occurred during efforts to meet schedule commitments tied to fee based projects
- Each of the events occurred on overtime.
- Evidence of significant management pressure imposed on workers to generate necessary supporting documentation quickly.
- SME involvement was reduced by management on two events instead of a thorough evaluation of the condition being performed.
- A Joint Review Group (JRG) was convened for continuing the work on CH2M-PER-2008-1891 without understanding of the crane malfunctions. The JRG focused solely on the radiological modifications to the work package.
- There were numerous instances of personnel working at the limit of the allowable working hours per week.
- Waivers to allow workers in excess of 72 hours per week were common.
- Virtually all management communications indicated a distinct focus on schedule.

Pressure to complete tasks quickly and excessive working hours are error likely situations that may lead to a less-than-through methods of performance and often results in excluding the SMEs who are essential to the quality of the final product.

2.2.7 Management Follow-up or Monitoring of Activities did not identify Problems (A4B1C04) (CC-07)

There were several situations in which the event investigations did not adequately identify the causes of the event. There were several instances where identified corrective actions were not effectively implemented.

- No corrective actions were launched for any of the PERs reviewed.
- CH2M-PER-2008-0723: The event investigation failed to identify the cause of the problem.

- CH2M-PER-2008-1091: The event investigation failed to address the potential damage to the jib hoist due to electrical current flow from the welding machine.
- CH2M-PER-2008-0835: repeated work interruptions due to crane malfunctions were slow to be communicated to FH equipment custodian.
- CH2M-PER-2008-1091: No Subcontractor oversight plans were in place for work in the ATCO shop.
- Subcontractor oversight of FH completion of actions committed as part of an HPI assessment used to evaluate crane events did not take place.

2.3 Human Factors

Error precursors existed that contributed overall to the level of human errors. While multiple error precursors were noted, the following more significantly impacted the events.

"Can Do" Attitude for Critical Tasks

- Crane and rigging operations are not simple activities and require creative and hard working crafts and as noted above, in several cases the work was underway to resolve an "upset" condition. In these cases the urge to adopt a "Can Do" attitude is a natural human urge. However, when combined with unknown hazards this can form a significant error precursor.
- As noted earlier, in none of the events, was there an alternative crane available, thus re-enforcing the perception of the need to get the job done.
- This is reflected by the number of cases where the crane operator or mechanic went beyond appropriate measures to keep the crane operable.
- Management focus on finding ways to complete work activities without adequately investigating events.
- Obtaining the 110 ton crane with the jib could not be erected on the 90 ton crane without obtaining authorization or verifying required inspections had been performed.
- Virtually all tank farm work efforts were focused on completing fee based projects.
- Workers were willing to work excessive amounts of overtime in order to meet management expectations.

Time Pressure

- Each of the events took place on overtime.
- In none of the events was an alternative crane available that could perform the function being done at the time of the event.
- Significant fee associated with PBIs was at stake

- In three cases the work involved upset or abnormal working conditions that the activity was underway to resolve, such as; a high radiation area, vapor control zone or high levels of contamination.

Inaccurate Risk Perception

- In only two of five events was the work suspended while the equipment was still operable.
- Neither TF-AOP 20 nor individual stop work was implemented in any of the events.
- In four of the five events, work continued after procedure or training should have caused the activity to be suspended.
- In four of the five events, the persons involved the event failed to recognize significance of the conditions being encountered.

Lack of Knowledge

- Neither crane operators nor mechanics had formal, documented training on the specific LMI systems.

2.4 Corrective Actions Completed

In addition to the specific remedial actions taken on the associated PERs the following actions were completed during the Causal Analysis process.

2.4.1 Actions by WRPS

During the course of the analysis performed by the causal analysis team issues were identified and addressed by the TOC. The following is a list of actions taken by TOC during the course of the analysis:

1. The expectation for mobile crane functional checks defined for TOC operation and lessons learned IB-08-048, *Clarification of Expectation for Crane Functional Check* issued.
2. TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging* has been modified to reflect functional check criteria contained in lessons learned IB-08-048.
3. Shift office red arrow log entry requiring HRB approval for all mobile crane work as an interim measure until applicable procedures are modified.
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5. Restricted the use of mobile cranes until a full length wire inspection was completed.

6. Revised TFC-ENG-FACSUP-C-25 to require critical lift designations for lifts at or above 90% of a crane load chart rating.
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11. Obtained an authorization basis review of the potential impact on TOC SMPs relative to the slip stick phenomenon.

2.4.2 Actions Taken, Initiated, or Planned by Fluor Hanford

Fluor Hanford Crane& Rigging Services investigates all crane operation anomalies and makes changes to the crane maintenance program. A member of the Crane & Rigging Staff participated on the TOC causal analysis team. The significant changes completed over the last year and in progress (including the specific actions from the TOC review) are listed below:

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5. Monthly and Annual Mobile Crane Inspections have been split into separate maintenance procedures. The 7-GN-068 procedure is the monthly mobile crane inspection and 7-GN-179 is now the corresponding annual mobile crane inspection procedure.
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8. A management assessment of fleet maintenance practices has been initiated.
9. Crane operators have been briefed on LMI error codes and expected responses.
10. A proposed change has been submitted to the Hanford Site Hoisting and Rigging Committee to change the *Hanford Site Hoisting and Rigging Manual* to require performance of a full functional and operational test of cranes after setting the crane up to make a lift.
11. Crane rental agreements in the future will reflect the change for contractors to require that any reconfiguration of a crane (e.g., installation or removal of a jib, new wire rope configuration, removal of load block/hook or headache ball, etc.) must be overseen by a designated Fluor Hanford Crane & Rigging representative.
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13. An assessment of current LMI training and evaluation process of mobile Crane operators will be performed by FH Training with technical support of FH Site Crane & Rigging Services.
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15. The Grove manufacturer has provided Crane & Rigging Services and Fleet Services staff documentation and a briefing on the "slip stick" phenomena that is caused by thermal contraction of the oil systems in cranes.
16. A Fluor Hanford report on the 90 Ton Grove Crane Boom Slip Stick phenomenon is in development and will be issued to all FH crane operators.
17. The Mobile Crane Rental Fleet Department Process Instruction (DPI) and 7-GN-097, *Frequent Inspection of Mobile Cranes*, will be placed in each crane.
18. The service manual for each mobile crane is being reviewed. The end result will be a crane specific annual inspection and lubrication sheet.

Crane operations are considered critical operations for Fluor Hanford. For the most part the changes listed above are focused on a specific part of the Mobile Crane Maintenance Program. In addition to these focused changes, several overall program initiatives will be implemented.

1. A Mobile Crane Hoisting and Rigging Compliance Matrix will be developed for the Mobile Crane Inventory operated by Crane & Rigging Services. This matrix will be a cross walk between the maintenance requirements found in the Hoisting and Rigging Manual and the implementing procedures used for conducting the required maintenance.

2. A Mobile Crane Operating Manual Maintenance Matrix will be developed for the mobile crane inventory. This matrix will be a cross walk between the maintenance requirements found in the each Crane Operating Manual and the implementing procedures used for conducting the required maintenance.
3. A crane operating anomaly response guide will be developed to provide consistency in response actions to crane operating issues.
4. Mobile cranes are rented by construction services for various tasks on the site. The rental process will be reviewed to ensure that Crane & Rigging Services expectations for crane operation are adequately communicated to the organizations renting the cranes.
5. A review will be conducted of the training and qualification programs utilized for both crane operators and crane mechanics. Included will be reviews of how special topics are delivered and documented by vendors on both old and new equipment.

2.4.3 Corrective Action and Causal Factor Alignment

Common Cause 01 (A3B2C02) Signs to Stop Were Ignored And Steps Performed Incorrectly

Addressed by:

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-07
Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

CC-CA-08
Provide and document specific training for FWS, SSW, and Shift manager qualified staff on changes made to TF-AOP-020, *Response for Placing Personnel*

Common Cause 02 (A2B2C01) Preventive Maintenance for Equipment LTA

This is addressed by:

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility

within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-02
Perform a documented review of all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

Common Cause 03 (A2B2C03) Corrective Maintenance for Equipment LTA

This is addressed by:

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-02
Perform a documented review all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

Common Cause 04 (A6B1C02) Training Requirements Not Identified

This is addressed by:

CC-CA-03
Revise TFC-BSM-TQ-STD-18, *Hoisting and Rigging Training Program Description,* to ensure subcontractor crane operator training is commensurate with FH crane operator training requirements developed as a result of the training assessment.

Common Cause 05 (A5B2C08) Written Communication Content LTA, Incomplete/Situation Not Covered.

This is addressed by:

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-06
Revise TF-AOP-020, Response *for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs.* For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

Common Cause 06 (A4B4C05) Emphasis On Schedule Exceeded Emphasis On Methods/Doing A Good Job.

This is addressed by:

CC-CA-06
Revise TF-AOP-020, Response *for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-08
Provide and document specific training for FWS, SSW, and Shift manager qualified staff on changes made to TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition.*

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs.* For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

Common Cause 07 (A4B1C04) Management Follow-Up Or Monitoring Of Activities Did Not Identify Problems

This is addressed by:

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-02
Perform a documented review of all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

CC-CA-03
Revise TFC-BSM-TQ-STD-18, *Hoisting and Rigging Training Program Description,* to ensure subcontractor crane operator training is commensurate with FH crane operator training requirements developed as a result of the training assessment.

CC-CA-04
Formally communicate to all subcontractors with existing contracts for performing crane operations in tank farms of the changes to TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging*, generated as a result of corrective actions in this report.

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs.* For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

3.0 INDIVIDUAL EVENT ANALYSIS

3.1 CH2M-PER-2008-0723.1

3.1.1 Problem Statement CH2M-PER-2008-0723.1

Construction building trades workers installed the swing-away jib and incorrectly reeved the auxiliary load line and attempted to perform a special lift using an incorrectly configured crane.

3.1.2 Background CH2M-PER-2008-0723.1

The work activity involved the special lift to install a Fold Track assembly into Riser #6 of Tank 241-C-109, in accordance with Work Package CLO-WO-07-1345. The work was originally scheduled to be done with the 90 ton crane but because the jib on the 90 ton crane could not be successful erected the 110 ton crane was used.

3.1.3 Time Line CH2M-PER-2008-0723.1

The time line for this PER is contained in Attachment B, Time Lines

3.1.4 Problem Analysis CH2M-PER-2008-0723.1

The work activity was planned for the 90 ton Grove crane. Building trades' construction workers were unable to correctly erect the folding boom extension jib and the crane operator noted that the computer system was not working properly[1]. The folding boom extension jib installation had not been properly completed by the construction forces. The installation of the folding boom extension on the 90 ton crane is an infrequent and complex work activity. Workers then obtained the 110 ton crane to perform the work.

The 110 ton crane did not have the swing-away jib erected, which was needed to perform the work. The workers installed the swing-away jib, but did not reroute (reeve) the wire rope for the auxiliary hoist line correctly to accommodate the swing-away jib. As with the 90 ton crane, the folding boom extension jib had never been installed by the workers before. No records were found to show that it was ever installed; relative to this event the installation of the jib on the 110 ton crane was a first time activity. The crane operator's manual for the 110 ton crane did not address the specifics of re-reeving the main boom to accommodate the raised sheave on the jib. The wire rope should have been rerouted above the roller, but was left reeved under the roller as shown in Figures six and seven below.

[1] This issue is discussed more fully in CH2M-PER-2008-0835.

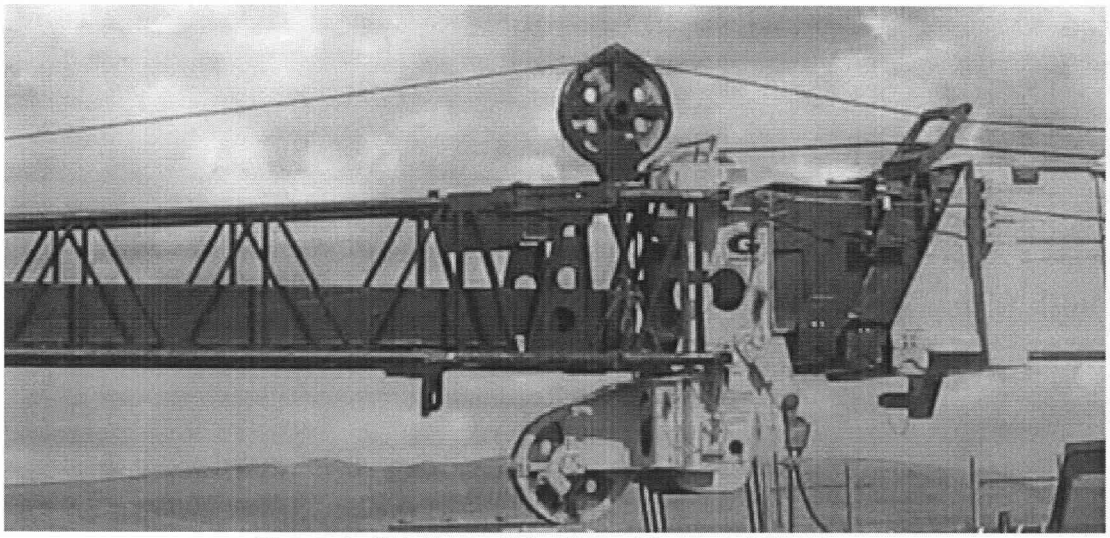

Figure 6: 110 Crane Side View of Incorrect Reeving

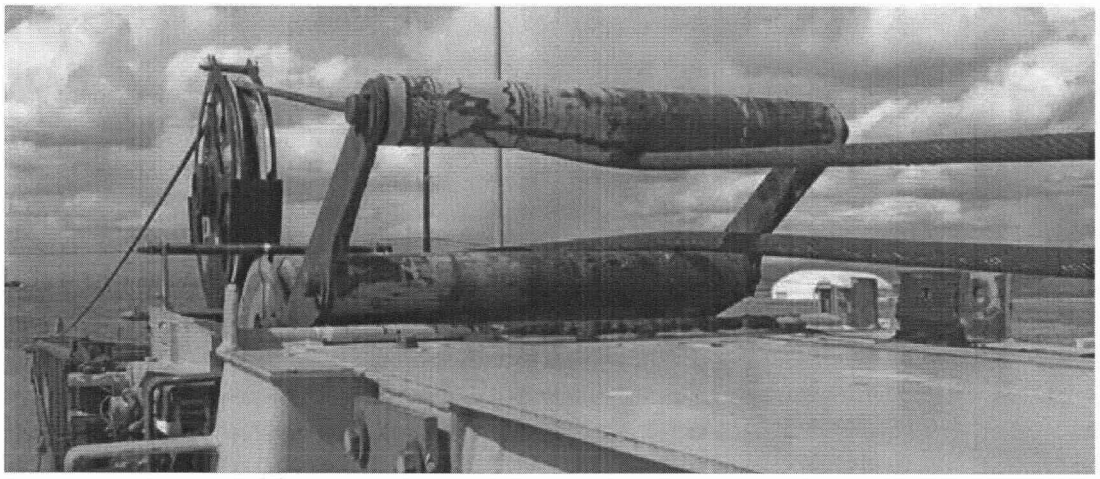

Figure 7: 110 Crane Close up of Incorrect Reeving

Both the 90 ton and the 110 ton crane jib installations were infrequently performed work. The reeving diagrams in the 110 ton crane operator's manual were less than adequate. The lack of adequate instructions and the performance of first time and infrequent activities are noted as contributing causes to the event. FH has updated the crane operator's manual and the first time/infrequent activity issue is addressed by modifying TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging,* to require that any reconfiguration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen by a designated representative of the equipment custodial company/organization.

Prior to use, the crane operator expressed uncertainty about the configuration, stating "that's not the way I'd do it." The crane operator did look at the crane operator's manual

for instruction but as noted earlier, the manual was not adequate. When questioned by the SSW, the crane operator was willing to continue the work activity. Work proceeded until the load dropped approximately eighteen inches for an unrelated issue discussed as CH2M-PER--2008-0723.2. The root cause of this event was determined to be that work was not stopped by the SSW when workers expressed uncertainty over the crane configuration.

A related issue not identified as a causal factor was identified during this analysis. The swing-away jib for the 110 ton crane had not been attached to the boom in a stored configuration[2] for an unknown number of years, and prior to the work activity had been stored in the 200 West Area. When installed and used, the swing-away jib had not been subject to the required periodic inspections required for mobile cranes and should not have been used until such an inspection had been performed. The crane custodian was unaware of the decision by construction forces to obtain or use the jib. Modifications to TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging Manual*, requiring equipment custodian oversight of field installation of jibs resolved this issue.

3.1.5 Cause Statements CH2M-PER-2008-0723.1

CC-0723.1-01
The Jib had not been used in several years. Erecting the jib represented infrequent work. (A3B1C04)

CC-0723.1-02
Crane Operators manual did not provide specific reeving instructions when installing the swing-away jib. (A5B2C08)

RC-0723.1-01
Work was not stopped when workers expressed uncertainty over crane reeving configuration. (A3B2C02)

DC-0723.1-01
Fluor Federal Services (FFS) did not re-route the hoist wire rope over the idler on the boom. (A3B3C06)

3.1.6 Extent of Condition CH2M-PER-2008-0723.1

The direct cause of the event was the incorrect reeving of the auxiliary hoist load line during the swing-away jib installation. There are very few mobile cranes in use that have the elevated sheave that requires the modified reeving for jib installation. The FH representative on the root cause analysis team reported that FH had inspected all other cranes and had not found a similar issue.

[2] Stored Configuration means the Jib is attached to the main boom but not erected.

3.1.7 Generic Implications CH2M-PER-2008-0723.1

The major reconfiguration of cranes in the field represents work that should have oversight by a designated representative of the equipment custodial company/organization. This issue was addressed by modifications to TFC-ENG-FACSUP-C-25, *CH2M HILL hoisting and Rigging.*

3.1.8 Safety Implications CH2M-PER-2008-0723.1

The condition, as related to the loss of control of the load, reflects a significant safety concern that could cause harm to personnel and equipment.

3.1.9 Corrective Actions CH2M-PER-2008-0723.1

CC-0723.1-01
The Jib had not been used in several years. Installing Jib represented infrequent work. (A3B1C04)

This issue was addressed by modifications to TFC-ENG-FACSUP-C-25, *CH2M HILL hoisting and Rigging.*

CC-0723.1-02
Crane Operators manual did not provide adequate instruction to change reeving on crane when installing Jib. (A5B2C08)

The crane operator's manual was updated by adding information from the vendor and no further actions are necessary.

RC-0723.1-01
Work was not stopped when workers expressed uncertainty over crane configuration. (A3B2C02)

This causal factor is not addressed by CC-CA-06, CC-CA-07, and CC-CA-08.

DC-0723.1-01
FFS did not re-route the hoist line over the idler on the boom. (A3B3C06)

This issue was addressed by modifications to TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging* to require equipment custodian oversight of modifications of equipment.

3.1.9.1 Immediate Measures CH2M-PER-2008-0723.1

The following immediate measures[3] were implemented as a result of the event.

- Base Operations Shift Office stopped all work with the 110ton Grove crane until an investigation of the cause and potential for damage was investigated.
- FH Crane and Rigging contacted Grove Crane representative to determine proper crane configuration and will update their procedures to reflect this.
- A completed inspection will be performed on the wire rope and crane to determine if there was any damage.
- The Engineering Crane and Rigging subject matter expert will assess the impact due to the 1'- 2' drop.
- Additionally the following recommendations were made and completed prior to resuming work with the crane on 4/9/2008.
- Ensure no damage to the crane or wire rope occurred prior to using the 110ton Grove crane.
- Update the operator's manual of the crane to ensure the instructions for future jib use are clearly defined.
- Perform a walk down of all cranes to assess if all operators' manuals for cranes that are equipped with jibs have the instructions for proper configuration.
- Perform a no-load operational test when the crane configuration is changed, i.e. jib installed.

3.2 CH2M-PER-2008-0723.2

3.2.1 Problem Statement CH2M-PER-2008-0723.2

During a special lift the load dropped approximately 18 inches, while suspended and the investigation did not identify the cause, and the crane was placed back in service

3.2.2 Background CH2M-PER-2008-0723.2

Work in 241-C Farm requires working in an extremely congested environment and most work requires the use of the larger cranes due to the inability to get a smaller crane close to the lift.

This lift was to require the use of the 90 ton crane, but the workers could not configure the folding boom extension jib on the 90 ton crane and so the 110 ton crane was used. The swing-away jib for the 110 ton crane had been removed several years before and was obtained without authorization in anticipation of potential need. When the jib was

[3] EIR-08-0006, Fact Finding for C-109 Crane, Wire Rope Spooling Anomaly

installed the crane was determined to have been mis-reeved, as discussed in section 3.1. The incorrect reeving became the incorrect focus of issues associated with the crane during the investigation.

This section of the analysis focuses on the load dropping, the subsequent investigation and placement of crane back in service and eventual determination of actual cause.

3.2.3 Time Line CH2M-PER-2008-0723.2

The time line is contained in Attachment B, Event Time Lines.

3.2.4 Problem Analysis CH2M-PER-2008-0723.2

During a lift of the Mobile Retrieval Tool (MRT) fold track in preparation for installation in the tank, the load dropped approximately 18 inches while suspended. Investigation found the wire rope hoist line was reeved incorrectly and this was determined to be the cause of the wire rope stacking. Subsequent evaluation found that the load drop was caused by the wire rope hoist line not spooling correctly on the drum due to the initial layer being spooled incorrectly.

The issue was not identified during the crane functional testing. The causal analysis team determined the criteria for the functional testing was insufficient as it did not require a functional test for the full range of motion required during the crane operation. DOE-RL-92-36, *Hanford Hoisting and Rigging Manual* contains the requirements to perform a functional test but does not contain the specific criteria. This was determined to be a contributing cause to the event and corrective actions have been developed to address this issue.

When the load dropped 18" inches, work was suspended and the shift office contacted. At this point the criteria for entering TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition* were met. The entry criteria for TF-AOP-020 are:

- *Notification by First Line Manager (FLM) of exceeding void limit of Radiological Work Permit;*
- *Work outside of approved work scope; or unexpected hazards are identified.*
- *Notification by FLM of conditions requiring crane operator to leave crane with load still suspended.*

The "unexpected hazard," is clearly met by the uncontrolled lowering of the load. In this situation the crane load could be placed on the ground without placing persons in the work area. The shift office was contacted and concurred. No extreme hazards were invoked by the failure implement TF-AOP-020, but a procedurally required tool was bypassed. CH2M-PER-2008-1891 has a more detailed discussion that is applicable to this issue.

A fact finding meeting was held for the event that included the affected workers, a large contingent of management, and the Safety Hoisting and Rigging subject matter expert. The Engineering Hoisting and Rigging SME nor the engineer responsible for the special lift were not contacted. This is listed as a contributing cause and corrective actions have been identified to address this issue. (CC-CA-05, CC-CA-09)

An investigation was initiated and mistakenly concluded the cause was the incorrect reeving. The Safety Hoisting and Rigging SME expressed concerns and indicated his belief that another cause may be to blame. He was unable to specifically identify an alternate cause and Site Crane and Rigging concurred with the initial problem determination. Therefore, work was allowed to continue. Additionally there was significant pressure to return the crane to service to meet schedule. Examples:

- The project manager bypassed normal management to obtain engineering analysis to return the crane to service.
- The Safety Hoisting and Rigging SME had to elevate concerns through the Acting Director of Safety to obtain action on recommendations.
- Inspections of the crane were performed in the tank farms instead of removing the crane to the shop.

The actions taken to return the crane to service were documented but reflected an *ad hoc* approach on the part of the TOC to placing a crane back in service following an event or major malfunction. These are identified as contributing causes and corrective actions are identified to correct (CC-CA-01).

During a second attempt to lift the MRT fold track, stacking of the wire rope was again observed and the work stopped. Additional investigation determined the problem to be that the first layer of rope on the drum was loose and had affected subsequent layers. This was corrected and the work was performed without incident.

The determination that the first layer of rope was loose but not detected by the annual inspections required by ASME B-30.5-2004, *Mobil and Locomotive Cranes*, and DOE-RL-92-36, *Hanford Hoisting and Rigging Manual*, section 8.3.3.3, which establish a requirement for an annual inspection of the full length of the wire rope. There was no evidence that the full length annual wire rope inspections was completed as required.

7-GN-068 combines the monthly wire rope inspections required by DOE-RL-92-036 (8.3.2) and OSHA with the annual wire rope inspection discussed above. The 7-GN-068 procedure combined annual and monthly inspections. What was lacking was the definition of the required wire rope inspection. The 7-GN-068 procedure quoted *General Industry Regulations*, OSHA 1910.180(g)(1) "*A thorough inspection of all ropes in use shall be made at least once a month*," but ASME B30.5 states, "*The entire length of rope.*" The field did not understand the meaning or requirement of thorough, and the procedure should have referenced ASME B30.5.

It is not clear from a review of the 7-GN-068 data sheet, or requirement in the body of the procedure that a full length inspection of the wire rope is being completed. The failure to perform the required annual inspection is a reason for removing a crane from service.

Immediate correct action was taken by FH Crane and Rigging to perform full length wire rope inspections on all cranes and changes to the 7-GN-068 procedure were initiated by FH.

3.2.5 Cause Statements CH2M-PER-2008-0723.2

DC-0723.2-1 Wire rope not spooled correctly. (A2B6C01)

CC- 0723.2 01 Expectations for functional test by crane operator not defined. (A4B1C02)

CC-0723.2- 02 Inspection of full length of wire rope were not performed nor clearly delineated in procedure. (A5B2C07, A2B2C01)

CC- 0723.2- 03 Event Investigation procedure has a "should" on holding a critique when multiple organizations or groups are involved. (A5B2C05)

CC- 0723.2- 04 Investigation of event was inadequate. (A4B1C05)

CC-0723.2- 05 No defined process for TOC to return a crane to service from malfunction or abnormal event. (A4B2C08)

CC- 0723.2- 06 Significance of event not recognized. (A3B3C01, A3B3C06)

CC- 0723.2- 07 Entry criteria for TF-AOP-020 is not clear nor is it consistently understood. (A5B1C07)

3.2.6 Extent of Condition CH2M-PER-2008-0723.2

The direct cause of the event, that the first layer of wire rope was not spooled correctly is limited to cranes. All cranes have been inspected and full length wire rope inspections performed.

3.2.7 Generic Implications CH2M-PER-2008-0723.2

Relative to crane activities, this event brings into question the implementation of the inspection criteria of DOE-RL-92-36, *Hanford Hoisting and Rigging Manual.*

Recommendations to FH will include a review of crane inspection procedures in use against the criteria of DOE-RL-92-36, *Hanford Hoisting and Rigging Manual.*

3.2.8 Safety Implications CH2M-PER-2008-0723.2

The condition reflects a significant safety concern in that required inspections were not performed nor clearly delineated in procedure.

3.2.9 Corrective Actions CH2M-PER-2008-0723.2

DC-0723.2- 01 Wire rope not spooled correctly

This issue was corrected immediately and other cranes inspected. No further corrective action is required.

CC- 0723.2 01 Expectations for functional test by crane operator not defined

This issue has been addressed by completed actions:

- The expectation for mobile crane functional checks defined for TOC operation and lessons learned IB-08-048, *Clarification of Expectation for Crane Functional Check.*
- TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging* has been modified to reflect functional check criteria contained in lessons learned IB-08-048.

CC-0723.2- 02 Inspection of full length of wire rope were not performed nor clearly delineated in procedure.

Monthly and Annual Mobile Crane Inspections have been split into separate maintenance procedures. The 7-GN-068 procedure is the Monthly Mobile Crane inspection and 7-GN-179 is now the corresponding Annual Mobile Crane inspection procedure.

CC- 0723.2- 03 Event Investigation procedure has a "should" on holding a critique when multiple organizations or groups are involved.

CC-CA-05: Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC- 0723.2- 04 Investigation of event inadequate

CC-CA-05: Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-09: Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, Tank Operations Contractor Safety Management Programs. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-0723.2-05 No defined process for TOC to return a crane to service from malfunction or abnormal event

CC-CA-01: Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC- 0723.2- 06 Significance of event not recognized

CC-CA-05: Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-06: Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-09: Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, Tank Operations Contractor Safety Management Programs. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC- 0723A- 07 Entry criteria for TF-AOP-020 is not clear nor is it consistently understood.

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-07
Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

CC-CA-08
Provide and document specific training for FWS, SSW, and Shift manager qualified staff on changes made to TF-AOP-020, Response *for Placing Personnel and Equipment in a Safe Condition.*

3.3 CH2M-PER-2008-0835

3.3.1 Problem Statement CH2M-PER-2008-0835

During lifting operations and in between lifts, the 90 ton crane computer received an error code that prevented normal operation. Work attempted to continue after criteria for taking crane out of service were met.

Unapproved maintenance protocols were applied to allow work to continue until the senior supervisory watch suspended work.

3.3.2 Background CH2M-PER-2008-0835

The 90 ton crane is a relatively new crane that uses a sophisticated computer to assist the operator. This computer is the communication with the crane operator of error codes and other potential issues with the crane and provides read outs that include boom angle, load radius, and weight.

The 90 ton crane had a series of malfunctions with the proximity switch, resulting in error codes being received on the LMI. The proximity switch, located under a metal cover at the base of the crane boom, was coming in contact with the metal cover, resulting in the E80 error code.

The mechanics previously fixed the problem by using electrical tape to hold the electrical wires together so they would not contact the protective metal cap. At times, they would have the crane operator remove the metal cover and operate the crane in that manner.

3.3.3 Time Line CH2M-PER-2008-0835

Time lines for the events are contained in Attachment B.

3.3.4 Problem Analysis CH2M-PER-2008-0835

Error codes had been received on numerous occasions in the past and the crane continued to be in operation for several months after initial identification of the problem. Neither

FH Crane and Rigging or Fleet Maintenance took adequate steps to resolve the issue. The ineffective response to the problems is included as a causal factor but the corrective actions being taken are not within the WRPS areas of control.

In the case resulting in this PER the error code received as a result of the observed malfunction is E80. This error code is not an error code that the operator is allowed to attempt to reset; however, before the mechanics were contacted the crane operator attempted to reset the computer. This is not consistent with the manufacturer's instructions but is a standard practice. This was not unique to this event. The causal analysis team determined that two distinct factors are relative to this practice.

First, the crane operators receive no formal training on specific cranes. The training received is generally in the form of a vendor briefing when the crane is obtained. All other training and qualifications are generic to a category of crane. The newer cranes have sophisticated controls and indications. When the cranes were obtained no analysis was performed to determine if additional training was needed. This is identified as a causal factor and FH is taking actions to obtain a training assessment to upgrade training as required.

The second factor is the unique sense of urgency in the field where crane crews are involved. Work involving cranes often includes dozens of craft persons, and as was the case in most events, is often done on overtime. Where the crane operator is capable of resetting the error codes, he often will. However the manufacturer's instructions have a limited number of error codes the operators are permitted to recover from, all others require a maintenance persons or vender support. The training discussed above will assist in resolving this issue.

When the mechanic, as was done in the past, recommended to the SSW the cover plate for the potentiometer switch be removed the SSW determined that operating the crane in this configuration is inconsistent with effective configuration control and suspended work. As a result of his actions, the crane was taken out of service. The core issue was identified and the crane was repaired.

One of the issues identified, which is out of WRPS control, is that the potentiometer was self identified by Grove and a replacement part developed for use in 2004. Neither Fleet Maintenance nor Fluor Crane and Rigging were aware of the replacement. Service bulletins are only available on a paid service and Fluor had not subscribed to the service. Fluor has since subscribed to the service.

3.3.5 Cause Statements CH2M-PER-2008-0835

The following are the direct and contributing causes determined by the causal analysis team for CH2M-PER2008-0835.

DC-0835-01 Electrical short between potentiometer and proximity switch casing

This short caused the E80 error code that initiated the events on April 16, 2008.

CC-0835-01 A training analysis is not performed for new and complex equipment

When the operator received the error code, he attempted to reset the computer on the crane. The instructions in the operator's manual provide a limited number of the error codes the operator may attempt to reset. Other error codes require contacting the dealer, or as understood by crane operators, the equipment custodian or the garage. When the operator was unable to reset the computer the garage was called. The causal analysis found this was a routine approach for this and other events.

The operator, although meeting all training requirements for the class of crane being operated, was found to have received no formal training specific to the 90 ton crane. However, a vendor briefing was provided that the operator may or may not have received. The lack of any specific training was tracked to a lack of any formal evaluation of training needs for new equipment.

CC-0835-02 LTA response by FH Maintenance in a series of issues with the 90 ton crane

There were repeated efforts to fix the problems noted with this issue on the 90 ton crane. Past efforts had included applying electrical tape to the short and operating with the cover removed. The correct answer was not discovered until after this event. That answer was that the potentiometer was of poor design and that in 2004 a replacement part was identified and available. Neither FH Maintenance or Site Crane and Rigging were aware of this problem that had been identified in a Grove service bulletin. Payable service was available that provides maintenance and service bulletins to customers; FH had not purchased this service.

This resulted in FH performing an HPI assessment. The FH HPI assessment identified three critical issues used to support the contributing cause:

> *Additional training to heavy equipment mechanics should be provided to allow them to more proficiently troubleshoot and identify mechanical problems with the cranes. The newer cranes rely on computerized controls, which our mechanics are not specifically trained to, resulting in longer periods of time required to troubleshoot and identify problems.*
> *Garage maintenance records should be more descriptive of repairs and troubleshooting performed on equipment. The maintenance records for this crane during this time period had very vague descriptions of troubleshooting and work performed. Nothing in the records identified which code was being received or any unique descriptions of the problem or resolution which would allow easy*

identification of the problem when reviewed for historical purposes, such as this instance.

Service bulletin notices or informational alerts are not received from the manufacturer. A process should be implemented to be able to obtain bulletins for maintenance information, recalls, modifications, etc., from either the manufacturer, or local crane repair or distribution centers. The ultimate problem in this situation was a poorly designed circuit. It was discovered that the manufacturer has revised this particular part twice since 2004 so it fits better in the compartment to avoid being cramped by the cover plate.

There is a root cause to this event but the causal analysis team determined it lies within the FH organization.

3.3.6 Extent of Condition CH2M-PER-2008-0835

For this event direct cause the extent of condition is limited. The causal analysis team does not have access to crane maintenance bulletins to determine if other similar conditions exist. However, during the assessment it was noted that the FH Fleet Maintenance organization had, in at least two cases, not maintained a crane in accordance with manufacturer's specifications. These situations were an incorrect frequency of lubrication for the booms on both the 75 and 90 ton cranes and missing approximately a dozen lubrication points on both cranes. This cannot be attributed solely to a lack of training by mechanics, but a lack of review of the information provided by the manufacturer for recommended maintenance frequencies.

3.3.7 Generic Implications CH2M-PER-2008-0835

The generic implications of this event are two fold. First the awareness that, as noted in the Fluor HPI assessment, the FH maintenance craft was poorly trained on the newer LMI computer dependent systems. This combined with the causal analysis team determination that training of the crane operators does not take into account response to error codes nor is it based on a systematic approach to training, in that a training analysis is not performed when new equipment with different or more complex systems are obtained.

The second generic implication is that the condition had existed for months and had manifested itself on several work activities at tank farms and had gone uncorrected. In this event the FWS, crane operator, and mechanic were ready to proceed but the SSW stopped the work activity and as a result, the actual issue was identified and corrected in a manner that would prevent recurrence.

The past failures to resolve the issue not withstanding, the responsibilities to stop work when equipment is malfunctioning is not standard practice where cranes are concerned and this is a significant potential hazard to workers.

3.3.8 Safety Implications CH2M-PER-2008-0835

The safety implications are clear. Some cranes have functions disabled by the LMI system during work activities due to error codes received. Bypassing, ignoring or improperly responding to these conditions can result in potentially life threatening events, such as observed on PERs 2008-0723 or 2008-1891.

When this happens, workers, including the crane operator, designated lead, FWS, or any person recognizing the hazard must take action as trained and stop the work until the hazard is understood and mitigated.

3.3.9 Corrective Actions CH2M-PER-2008-0835

DC-0835-01 Electrical short between potentiometer and proximity switch casing

The corrective actions taken in response to the event addressed the direct cause.

CC-0835-01 A training analysis is not performed for new equipment

Fluor Hanford is performing a training evaluation relative to the man-machine interface represented by the LMI on the newer cranes.

CC-0835-03 LTA response by FH Maintenance in a series of issues with the 90 ton crane

Fluor Hanford has initiated an assessment of fleet maintenance practices that will address this issue.

Within WRPS this issue will be addressed by:

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

3.3.9.1 Remedial Actions CH2M-PER-2008-0835

With assistance from a Grove representative FH mechanics identified the problem as being a short in the wiring to the servo potentiometer/swing proximity switch caused by

contact with a metal protective cover. A replacement part was installed that ultimately corrected the problem. This part was apparently modified by the manufacturer in 2004 resulting in reduced potential for contact with the protective cover.[4]

3.4 CH2M-PER-2008-1091

3.4.1 Problem Statement CH2M-PER-2008-1091

Sparks were observed between and a non-electric lifting magnet and a metal table. The lifting device was suspended from an electric chain hoist with pendant control. The hoist was returned to service without proper evaluation and when evaluation was performed the hoist failed the load test.

3.4.2 Background CH2M-PER-2008-1091

The ATCO shop was constructed in the early 1980s with a common grounding system, which was per code at the time of construction. It was recommended, by the National Electrical Code inspector, that welding equipment be additional grounded to the work surface as an added precaution.

In February 2004 the jib boom and electric chain hoist were installed and load tested. At this time this facility was considered to belong to construction forces. Records of inspections on this hoist have been forwarded to the Equipment Custodian when the facility was turned over to Tank Farms in 2007.

Work was underway to fabricate steel plates. The plates were being lifted to the metal welding table using the chain hoist.

3.4.3 Time Line CH2M-PER-2008-1091

Time lines are contained in Attachment B, Event Time Lines.

3.4.4 Problem Analysis CH2M-PER-2008-1091

Workers performing the work in the ATCO shop saw sparks on three separate occasions but failed to take appropriate actions that could have been an immediate stop work,. Contacting the FWS, Shift Office, or simply implementing stop work would have been effective but work continued up to the point that equipment failed. This is identified as a contributing cause and corrective actions are included in the report to address the deficiency.

[4] As contained in PER-2008-0835

The direct cause of the event was determined to be a broken foot pedal controller to a welding machine on a welder. The ATCO shop has a history of poor equipment maintenance and subcontractor oversight was less than adequate. This was identified, but inadequately addressed in CH2M-PER-2008-1367. The control of the shop has been formally transferred to Base Operations. Corrective actions to review subcontractor oversight are included in this report.

A fact finding was held for what was seen as an electrical safety issue. A review of the attendance roster indicates the CH2M Lead for electrical systems was not notified of or invited to the fact finding. Had a critique been required he would have been included in the session. There are few differences between a fact finding and a critique, as administered beyond attendance. The primary relevant difference for this report is that a fact finding can be held without contacting the appropriate SME while a critique cannot.

The procedure is unclear on this issue, TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, has a note that states:

> *NOTE: Meetings where large groups of personnel or multiple organizations are involved should be conducted as a critique.*

This, according to the primary author of the procedure is intended to require a critique process if meetings are going to be held, is not implemented as intended. Virtually all fact findings use the meeting process and include more than one organization but the criteria for critiques are not applied. This is identified as a contributing cause and is addressed by corrective action.

After addressing the electrical issues the jib hoist was returned to service. The safety hoisting and rigging SME expressed concern over returning the hoist to service. Base Operations management's feed back was that this was an electrical issue, not a hoisting and rigging issue. As a result the hoist, although inoperable, was placed back in service. A contributing cause, that the individual manager failed to recognize the hazard is include in the report as an individual human error. The overall failure of the inadequate investigation is determined to be the root cause. Corrective actions to address this issue are included in the report. (CC-CA-05, CC-CA-09)

3.4.5 Cause Statements CH2M-PER-2008-1091

DC-1091-01: A broken spring on the foot pedal of a welder allowed current to flow without an operator. The welder stinger was on the metal table and provided a source of current to the table. (A2B6C01, A3B1C03)

If the spring on the foot peddle had been repaired this would have prevented the current at the sting and would have prevented the current from flowing to the hoist housing

CC-1091-01: Inadequate subcontractor oversight (A4B1C05)

No subcontractor oversight plans were in place for the facility.

CC-1091-02: Stop work authority was not invoked (A3B2C02)

When the first spark was noticed the pipe fitter did not recognize this has a hazard and continued work. Work was not stopped until a fuse blew for the hoist and it would not operate. There were at least three other opportunities for the craft to stop work prior to the fuse blowing.

CC 1091-03 Hoisting and Rigging SME directed to restrict involvement

When concerned about the potential impacts to the jib hoist the Safety SME was directed, based on a Base Operations Manager's determination, that the issue was electrical, to suspend involvement.

CC-1091- 04 Manager failed to recognize hazard (A3B3C03)

The Base Operation's Manager failed to recognize the potential for damage to the jib hoist and determined the level of investigation had been adequate. The determination was made with incomplete information as the jib hoist was not the focus of the investigation.

CC-1091-05 Unclear criteria for critique verses fact finding (A5B1C07)

The determination was made that a fact finding should be held but the session was held as a critique without implementing the criteria for a critique, resulting in the Engineering Electrical Standards SME not being involved. Subsequent interviews with the Engineering Electrical Standards SME indicated he should have been involved.

RC-1091-01 Lack of effective investigation of event (A4B1C05)

The event was assumed to be electrical and all investigation and troubleshooting was focused on the electrical nature of the problem.

3.4.6 Extent of Condition CH2M-PER-2008-1091

The direct cause of the event, the broken foot peddle, is relatively limited in scope. The root cause of the event, an inadequate investigation of the event has broader implications. Inadequate investigation processes by the TOC were noted in CH2M-PER-2008-0723 and CH2M-PER-2008-1891 as well. Corrective actions are included in the report to address this issue.

3.4.7 Generic Implications CH2M-PER-2008-1091

The bulk of work at the TOC is performed using subcontractors in one form or another. Personnel issues aside, this event is clearly the result of poorly defined lines of responsibility for facility ownership and effective sub contractor oversight. The implications of this event are twofold. First, subcontractor personnel must be able to implement the stop work protocols expected of them, and second, the subcontractor oversight process must be robust. Corrective actions to implement these determinations are included in the report.

3.4.8 Safety Implications CH2M-PER-2008-1091

The craft did not recognize the hazard that existed when they saw the first spark. This should have been an indication that the potential of an electrical short was present. This is a condition where someone could have been shocked, but the work continued.

The failure to test the hoist prior to returning to service also has safety implications. The failure mode in this case did not result in a catastrophic failure that was not due to TOC diligence rather by circumstance. Hoisting device failure has the potential to cause serious injury.

3.4.9 Corrective Actions CH2M-PER-2008-1091

DC-1091-01: A broken spring on the foot pedal of a welder allowed current to flow without an operator. The welder stinger was on the metal table and provided a source of current to the table.

This was corrected at the point of discovery.

CC-1091-01: Inadequate subcontractor oversight.

CC-CA-02
Perform a documented review of all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

CC-1091-02: Stop work authority was not invoked.

This was determined by initial investigation to be an isolated human error.

CC 1091-03 Hoisting and Rigging SME directed to restrict involvement

CC-CA-09: Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-1091- 04 Manager failed to recognize hazard

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-1091-05 Unclear criteria for critique vs. fact finding

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

RC-1091-01 Lack of effective investigation of event

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, Tank Operations Contractor Safety Management Programs. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

3.5 CH2M-PER-2008-1891

3.5.1 Problem Statement CH2M-PER-2008-1891

Following entry into TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition,* for elevated contamination levels in the work place, workers had re-entered the 241-C Farm to replace the cover plate on the POR104 above ground valve box. During this activity the 90 Ton Grove crane became non-responsive when the boom abruptly retracted 16-20 inches which caused the LMI to disable the boom down and hoist up functions (i.e., safe mode).

Workers moved clear of the uncontrolled load safely. The load was partially resting on a handrail and portions of the rigging were slack, the crane operator was directed to lift the load so it could be placed on the ground. This was prevented when the load caught on the tube and clamp railing around the work area.

Work continued with workers re-entering the work area to dislodge the cover plate where it had become caught. When the load was freed, the crane operator raised the boom and swung the cover plate over to a safe location and was able to use the hoist to lower the plate to the ground.

3.5.2 Background CH2M-PER-2008-1891

The 90 ton crane and the 75 ton Grove cranes are the newest large cranes acquired by the site crane and rigging contractor. Their design has significant differences from the other cranes used on site in both boom design and the complexity of the computer system installed on the crane.

This was the first recorded instance of the boom segments undergoing an uncontrolled retraction during crane operation, referred to as "stick slip."

3.5.3 Time Line CH2M-PER-2008-1891

The time line for this PER is contained in Attachment B, Event Time Lines.

3.5.4 Problem Analysis CH2M-PER-2008-1891

Workers exited the 241-C farm during crane operations due to entry into TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, when higher than anticipated levels of contamination were found in the work area.

At the time the workers re-entered the farm, the load, (the POR104 pit cover weighing approximately 13,000 pounds) was on the ground, connected to the crane, which was shut down with the boom extended approximately 100 feet.

Crane booms will normally retract slowly due to thermal contraction of the hydraulic fluid[5]. This routinely happens smoothly and in small increments as the hydraulic fluid cools. When the crane boom segments are held in place due to friction, such as can be caused by inadequate lubrication, the retraction can occur suddenly and forcefully.

Prior to this event the crane boom was being lubricated on a quarterly basis, the manufacturers recommendations are for weekly or 50 hours of operation lubrication. Quarterly lubrication cycles were appropriate for older styles of crane with looser tolerances in the boom sections.

As noted, the crane was left with the boom extended (with the load on the ground) approximately 100 feet for several hours and the hydraulic fluid cooled. Where a properly lubricated crane would have had normal retraction, the poorly lubricated boom hung up until it slipped in abruptly, causing the plate to drop. For this specific event the failure to maintain the equipment in accordance with the manufacturer's recommendations was determined to be the root cause of the event.

This reflects less than adequate maintenance practices that caused the boom to retract, thus the LMI limited some of the crane control functions. Boom retractions greater than 3 percent or an overload condition will result in the crane's computer to limit functions of the crane as a safety control feature. The controls allowed are limited to hoisting down, booming up, and retracting the boom.

When the crew returned, the crane was restarted and the lifting operation to reinstall the pit cover continued with the boom still extended. At some point in the lifting operation, the boom retracted, causing the load to settle onto the handrails surrounding the POR-104 above ground valve pit. The LMI computer indicated an error code and limited functions of the crane which prevented completing the pit cover installation.

At this point, the criteria for entering TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition,* were met, but not for radiological reasons. The entry criteria for TF-AOP-020 are:

- *Notification by FLM of exceeding void limit of Radiological Work Permit;*
- *Work outside of approved work scope; or unexpected hazards are identified.*
- *Notification by FLM of conditions requiring crane operator to leave crane with load still suspended.*

The following clarification is provided for the third bullet:

[5] See Attachment F for more details of thermal contraction

NOTE - The following is a list of some of the conditions/situations where crane operations may have to be suspended while a load is suspended from the hook:

- *Unexpected dangerous radiation levels are encountered as the load is raised and it is not possible to lower the load without exposing the crane operator*
- *Crane controls become inactive or erratic such that attempts to lower the load endanger the operator and/or personnel on the ground*
- *Crane boom or load inadvertently comes into contact with power or transmission lines*
- *Weather conditions deteriorate to the point that it is unsafe for the crane operator to remain in the cab of the crane (e.g., severe lightning or high winds)*
- *Any other condition where time is of the essence for the crane operator to evacuate the immediate area (e.g., unexpected criticality, terrorist/bomb threat, seismic event, etc.).*

In the above text two criteria were evaluated. The first criterion is the "unexpected hazard." The uncontrolled lowering of the load meets the criteria for an unexpected hazard. In this situation, if the crane load could be placed on the ground without placing persons in the work area, the determination complete this task would be reasonable, as any attempt to lower the load would not endanger either the operator or personnel on the ground.

In an effort to place the work site in a safe configuration, the FWS directed the placement of the cover plate on the ground but when the cover plate was lifted, it caught on the edge of the environmental barrier and two iron workers and the FWS were required to manipulate the plate in order to free it.

At this point, the need to send workers in the work area such that they are in contact with the load brings into question whether the load should have been left suspended, pending subject matter expert input. The criterion for doing so is: *Crane controls become inactive or erratic such that attempts to lower the load endanger the operator and/or personnel on the ground.* In this case, neither the FWS nor the designated lead (DL) believed they were endangering personnel by attempting to free the load and place it on the ground. A fundamental concept of crane operations is that the safest place for a load is on the ground. However, in the post work perspective it is clear that neither the DL nor the FWS were aware of the actual problem with the crane. There is no way of saying what the subject matter expert advice would have been or whether the same actions would have been performed.

This leads back to the intent versus perception of TF-AOP-020. The intent of the procedure was to broaden the response to events, hazards, or issues in the field to include the command and control function of the shift office and provide for subject matter experts consultation when entry criteria are met. The general perception of the procedure

is quite different. Discussions with field work supervisors, a review of the training materials implementing TF-AOP-020, and the text of TF AOP 20 all give credence to the perception that TF-AOP-020 is for radiological events.

The entry criteria to TF-AOP-20 lists two very specific events, the determination by a FWS that an Radiological Work Permit (RWP) void level is exceeded and the determination by a FWS that a load needs to be left suspended. The third criteria: *Work outside of approved work scope; or unexpected hazards are identified* is somewhat generic and there are only limited examples of this criteria being applied.

The training for TF-AOP-020 is included in Tank Farms Hanford General Employee Training and contains all of the relevant text of the procedure but is presented under the "Stop Work" training section. TFC-POL-32, *Stop Work Responsibility,* does not reference or discuss TF-AOP-020.

This leaves TF-AOP-020 as somewhat of an "orphaned" procedure in terms of scope and implementation. In effect it is the institutional piece of the stop work protocol but is not referenced or trained to in that capacity. The FWS not recognizing that he was in a TF-AOP-020 event was identified as a contributing cause for this event. Additionally the lack of clarity for the entry criteria as written in TF-AOP-020 was also identified as a contributing factor. Corrective actions to better implement TF-AOP-020 are included in this report.

As TF-AOP-020 was not invoked, the workers re-entered the work area and were able to free the plate from the environmental barrier. Once free the plate was placed on the ground in a safe configuration. At this point the crane operator attempted, but was unsuccessful in restoring crane controls and, with the boom still extended, the crane was turned off to await a maintenance mechanic.

Interviews indicated that, if the crane operator had been able to restore the crane operability at this point the crane would have been returned to service and the work would have continued. As discussed in CH2M-PER-2008-0835, this indicates a weakness in terms of the crane operators understanding the limits of their authority to continue to return a crane to service. These are both identified as contributing causes in the event and FH taking action to address the issue.
The crane was taken out of service, a maintenance work order initiated, completed, and the crane was returned to service. The completed work order was marked as complete with no annotation that further testing or evaluation was needed.

During the period when the crane was out of service there was no tag attached to the crane indicating the crane should not be used. Interviews indicated that crane operators do not hang tags to take a crane out of service, only maintenance craft. This practice is inconsistent with FH DPI -5, which specifically states: *The Mobile Crane Inspector, Equipment Custodian or Crane and Rigging Services Supervision can use the WARNING*

tag(s) to identify a deficient crane component. The lack of warning tag installation by the crane operator is a barrier to communication, as it is the mechanism for a crane operator to document problems with a crane. This is identified as a contributing cause to the event.

The same day as the event, the work package was revised to address the radiological conditions, but the minutes of the JRG meeting did not indicate any discussion of the event occurred. Interviews with the JRG chairperson indicated some of the JRG members were aware of the event.

No fact finding or critique was initiated as a result of the event until two weeks later. By that time the crane had been taken out of service.

The failure of personnel involved: the craft, the FWS, CH2M HILL Hanford Group, Inc (CH2M) management, and FH to recognize the significance of the event was noted throughout the causal analysis and is considered a contributing cause.

The crane was returned to service and the job completed the next day. The boom retraction event with the 90 ton crane was recreated on September 25, 2008 at the 6290 facility and a large uncontrolled boom retraction was observed.

The crane was removed from service and is awaiting completion of internal reviews by FH prior to being returned to service.

3.5.5 Cause Statements CH2M-PER-2008-1891

Root Cause
RC-1891-01 Equipment not maintained in accordance with manufacturers instructions (A5B2C08)

The manufacturers recommended frequency for lubrication of the main boom segments was not followed.

Direct Cause
DC-1891-01 The crane boom underwent an uncontrolled retraction (A2B6C01) (A2B2C01)

The phenomenon of rapid boom segment retraction ("Stick slip") was not well understood, anticipated or mitigated with proper maintenance.

CC-1891-01
Problems associated with equipment operations are not documented. (A4B1C01)

When the crane operator left the field with the crane in an inoperable condition, no documentation to that effect existed. Warning tags that should be used for that process were not available in the cab and during interviews the operator indicated that was not a crane operator function.

CC-1891-02
Equipment operators had not been briefed on all hazards associated with specific equipment (A6B1C03) (A6B3C02)

Training on new equipment is generally informal and based on a vendor presentation that is meant to supplement the crane operator experience and knowledge.

CC-1891-03
TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, lacks specificity for entry criteria (A5B1C07)

Awareness for the varied entry conditions for TF-AOP-020 is inconsistent across the entire organization. The Abnormal Operating Procedure is generally viewed to be a procedure for dealing with radiological issues such as off-scale radiation readings, as evidenced by worker interviews, Hanford General Employee Training content and the priorities written within the procedure.

CC-1891-04
The FWS did not consider event as a TF-AOP-020 event (A4B1C01)

Across the organizations, there does not appear to be a uniform understanding of senior management expectations as to what constitutes an allowable work situation and what situations warrant stopping work and/or placing personnel in a safe location.

CC-1891-05
General lack of significance attached to event (A4B4C05)

The initiating PER noted simply that the crane had become non-responsive. It took over two weeks for a fact finding to be held.

3.5.6 Extent of Condition CH2M-PER-2008-1891

Although the manufacturer indicated that boom retraction due to thermal contraction of the hydraulic fluid is possible in all hydraulic cranes, the boom design of the 90 ton and 75 ton Grove cranes is more susceptible to this phenomenon.

The facts that the specified lubrication for the boom segments was incorrectly too infrequent, the design of the boom segment friction pads and that the boom was left extended for several hours contributed to the severity of the event.

Maintenance records were reviewed for both the 75 and 90 ton crane to ensure the lubrication frequencies were modified. This review was performed by FH at the request of the causal analysis team.

3.5.7 Generic Implications CH2M-PER-2008-1891

One of the more significant implications of CH2M-PER-2008-1891 is that the work was not suspended when TF-AOP-020 conditions were met, and that the significance of the event was not recognized either at the time of the event or immediately following the event.

As discussed throughout this report the willingness to suspend active work when new hazards are encountered is generally lacking. Personnel have demonstrated a tendency to work through the issue, failing to recognize the significance.

The fact that the crane was left in the tank farm without being tagged out of service means that by all measures used to date, the crane was available for use. Configuration control of equipment in the tank farms is critical.

Corrective actions being taken by FH address this issue.

3.5.8 Safety Implications CH2M-PER-2008-1891

The safety implications are significant. Workers re-entered the work area to manipulate a suspended load on a malfunctioning crane without knowing what the malfunction was. Continuing work with hoisting and rigging equipment without fully understanding the malfunction can result in injury or death.

The crane was placed back in service without diagnosis or correction of the problem. As such, the event could have occurred again with serious consequences.

3.5.9 Corrective Actions CH2M-PER-2008-1891

RC-1891-01 Equipment not maintained in accordance with manufacturers instructions (A5B2C08)

Mechanics have since undergone more rigorous training and the maintenance schedules for crane lubrication have been modified. No further correction action required.

DC-1891-01 Stick Slip Phenomenon (A2B6C01) (A2B2C01)

FH and subcontractor crane operators have received briefings on the subject. Warning labels have been placed in the cabs of the 75 and 90 ton cranes. The maintenance schedules for crane lubrication have been modified to comply with manufacturers recommended schedules.

CC-1891-02 Equipment operators have not been briefed on all hazards associated with equipment (A6B1C03) (A6B3C02)

Crane operators were briefed on the thermal contraction and "stick-slip" phenomenon and the specific event. This was accomplished by a visual presentation developed from the operator's manual and documented with a training completion roster. A warning placard was placed in the crane cab to re-emphasize the point to the crane operators.

CC-1891-03
03 TF-AOP-020 **Lacks specificity for entry criteria (A5B1C07)**

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition,* section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-1891-04
04 FWS did not consider event as a TF-AOP-020 **event (A4B1C01)**

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-07
Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

CC-CA-08
Provide and document specific training for FWS, SSW, and Shift manager qualified staff on changes made to TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition.*

CC-1891-05
05 General lack of significance attached to event (A4B4C05)

CC-CA-09–Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution, Significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-1891-06
Problems associated with equipment operations are not documented. (A4B1C01)

FH has reinforced their existing process to ensure the crane operators document problems with the cranes and hang out-of-service tags when appropriate.

4.0 LESSONS LEARNED

Two lessons learned were identified.

The first is an internal lessons learned that addresses the criteria for crane functional checks. This lessons learned has been issued: Lessons Learned IB-08-048, *Clarification of Expectation for Crane Functional Check, November 13, 2008*

The second lessons learned will be issued by FH and will provide information on the slip stick phenomenon and will address the specifics associated with the slip stick event and the causal factors.

5.0 REFERENCES

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4. 75A00JRFP-08-002, R1, *Fact Finding Event Investigation Report EIR-2008-012, "ATCO (242AC) Jib Crane Sparks Observed"*, June 11, 2008
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12. CH2M-PER-2008-0835, "RES; 90 Ton crane error codes…", April 16, 2008
13. CH2M-PER-2008-1091, "RES; Sparks from equipment in fabrication room…", May 16, 2008
14. CH2M-PER-2008-1295, "RES; On June 19, Tank 241-AN-102 annulus riser 048 was damaged by a crane…", June 19, 2008
15. CH2M-PER-2008-1367, "RES; Subcontractor oversight plans for WGI and FFS are not in place as required by TFC-BSM-CP_CPR-C-05, Procurement of Services…", June 25, 2008
16. CH2M-PER-2008-1891, "RES; 90 Ton Grove crane operation was non-responsive following a restart in C Farm…", September 9, 2008
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21. Copy Logbook A-Shift, dated September 19, 2008, pages 24-33
22. Copy Logbook C-Shift, dated April 6, 2008, pages 5-8
23. Copy Logbook C-Shift, dated May 16, 2008, pages 84-85
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58. WFO-07-1957, *277A (ATCO BLDG) Jib Hoist Annual Inspection*, no date
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60. WFO-WO-08-0005, *WFO Construction minor Work Order 2008*, January 1, 2008
61. WRPS-0800083, *Critique Report: "Critique for 90 Ton Grove Crane Non-Responsive in C-Farm (9/20/08) (Report NO. 2008-020)*, October 28, 2008
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Attachment A: Summary of Events

The following is a summary of the primary events evaluated to develop this causal analysis report

CH2M-PER-2008-0723 and Fact Finding EIR-08-0006
April 6 (110 ton crane)

A wire rope spooling problem occurred April 6, 2008 while making a special lift in C Farm causing the load to suddenly lower approximately 18 inches while suspended from the crane. The cause of the problem was misdiagnosed and the crane was returned to without the problem being corrected.

Additionally, this lift was attempted with an incorrectly configured crane, in that; the wire rope was incorrectly reeved during a special lift evolution. This did not affect the load lowing suddenly, but reflects an independent issue.

CH2M-PER-2008-0835
April 16 (90 ton crane)
While preparing to install a transfer pump jumper in AZ Farm the crane experienced an error code which deactivated its control system. The ensuing investigation revealed this had been an ongoing problem with this particular crane. FH Fleet maintenance personnel had made several attempts to address the issue but only temporary fixes had been achieved. Further investigation identified an electrical short in the wiring of the swing proximity switch. Crane mechanics had been aware of this short but did not take action to obtain a replacement part. Further it was discovered that a manufacturer's modification had been made to this particular part several years ago making it less susceptible to the condition.

CH2M-PER-2008-1091
May 16 (Jib hoist in ATCO shop)
This PER identifies a problem in the ATCO shop where sparks were observed between a non-electric lifting magnet and a metal fabrication table. The magnetic lifting device was suspended from an electric hoist on a jib crane. During a fact finding meeting, mechanics performing the work also reported hearing unusual noises coming from the electric hoist after observing the sparks. This event was classified as a management concern and Occurrence Report CHG-TANKFARM-2008-0005 was initiated.

At the request of the Safety SME for hoisting and rigging, the lead equipment custodian followed up and requested an inspection and load test by qualified FH crane and rigging personnel. The hoist failed load test with just over 50 percent capacity applied. It was removed from service and must be repaired in accordance with manufacturer specifications or replaced.

CH2M-PER-2008-1891
Sept 20 (90 ton crane)

A load dropped approximately 8 inches and moved horizontally 18 inches when attempting to place the cover plate on POR104. During the lifting operation, the LMI restricted crane functions as a protective measure. Work continued with the crane to put the load on the ground. The crane was returned to service the next day, but removed from service when subsequent testing found that "...the boom retracted freely a few feet."

Attachment B: Event Time Lines

CH2M-PER-2008-0723

Date	Time 24 Hour 0000-2400	Activity
Sunday, April 6, 2008	0635-0815	C Farm - Held pre-job for the Construction Acceptance Test and MRT (fold track) installation (CLO-WO-07-1345 and CLO-WO-07-1348).
	0815-0845	Workers ACED in for C Farm work
	0845-1020	Entered C Farm, completed Construction Acceptance Test, and reconfigured 110 Ton Grove (17T-05691) by installing jib section of the boom. NOTE: Wire rope hoist line incorrectly reeved under the boom guide roller (idler). Discussions were held involving SSW, FWS and crane operator due to uncertainty with the wire rope reeving and all agreed to continue with crane work.
	1000-1030	Exited C farm for lunch
	1030-1100	Lunch
	1115-1255	Dressed out, entered C Farm and set up for MRT installation into riser #6. Installed ground cover and drape around riser, controlled area as high contamination area, removed riser bolts and installed sleeving at riser. Held additional pre-job with personnel involved and reviewed the special lift instruction. Removed blind flange from riser (sleeving remnant now on riser). Verified drain holes in riser unit interface, connected rigging to riser unit interface per special lift instruction.
	1255-1310	Started hoisting the MRT. When load was approximately 15 feet in the air it dropped suddenly about 18 inches. The lift was stopped and discussion held with crane operator and DL. Checked to see if rigging had slipped and checked wire rope hoist line. The wire rope was observed to be stacking on one side of the hoist drum. The decision was made to lower the load back onto the stand and suspend work activities with 110 Ton crane (17T-05691).
	1340-1510	Exited C Farm and held post job review.

Date	Time 24 Hour 0000-2400	Activity
Monday, April 7, 2008		Fact finding held regarding the C Farm 110 Ton (17T-05691) crane event that happened on the previous day (April 6, 2008).
		Fluor Hanford Crane and Rigging obtained verbal instruction from Coast Crane (vendor) on how to correctly reeve the wire rope hoist line with the jib installed.
		The 110 Ton (17T-05691) crane manual was updated with an insert to include information on correct reeving when installing the jib section of the boom.
		Fluor Federal Services personnel re-reeved the wire rope hoist line on the 110 Grove (17T-05691) from under the idler to over the idler as instructed by Coast Crane.
		FFS and FH Crane and Rigging performed inspection of wire rope hoist line. No damage noted.
Tuesday, April 8, 2008		CH2M Safety Program Hoisting and Rigging (H&R) SME was not convinced that incorrect reeving was the cause of the wire rope miss-spooling and provided recommended actions to be completed prior to returning the crane to service: • Need verification from Grove as to the correct configuration for the wire rope hoist line when using the jib. • Results of wire rope and crane inspection (along with information obtained from Grove) need to be evaluated to help determine cause of problem. The current "assumption" is routing of the wire rope was incorrect for the jib. Other possible contributing factors (e.g., wire rope wedged at end of roller) need to be identified (or ruled out) before drawing final conclusion. • Engineering calculations should be performed to determine loading placed on crane and rigging gear do to shock forces. • Engineering evaluation should be performed to determine relative condition necessary to allow load to suddenly drop (lower) the distance it did (18-24 inches?). This will also help determine root cause with greater certainty.
Tuesday April 8, 2008		CH2M Engineering performed a shock load evaluation and determined the crane had not been overloaded.
		Coast Crane provided written direction/confirmation regarding the correct reeving for jib installation.

Date	Time 24 Hour 0000-2400	Activity
		E-mail from CH2M Closure Projects Production Control Manager to the Project Director indicated all actions were complete and the crane work could be resumed.
		Fluor Hanford Crane and Rigging reported the 110 Ton Grove (17T-05691) was ready to be returned to service.
Wednesday, April 9, 2009		Second attempt was made to lift MRT in C Farm with personnel assigned to observe the hoist drum while lifting. Stacking of the wire rope hoist line to one side of the drum was again observed and work was stopped. This time the load did not drop suddenly and was placed safely back into the stand.
		The crane was removed from C Farm and taken to the FH rigging loft for further evaluation.
		Crane was set up and operated in same configuration as it was in C Farm and again the wire rope stacked on one side of the hoist drum.
		FH Crane and Rigging removed the entire length of wire rope from the drum and noted first layer not tightly wrapped as it should have been.
		FH Crane and Rigging re-wrapped wire rope on drum correctly and cycled several times under load without any stacking problems.
		FH Crane and Rigging reported crane was ready to be returned to service.
		C Farm project management and FFS management authorized crane to be placed back into service for C-109 MRT installation.
Thursday, April 10, 2008		110 Ton Grove (17T-05691) returned to C Farm and work was performed without further incident.
Saturday, March 8, 2008 Or earlier to Thursday, April 10, 2008		Numerous difficulties with the computer LMI system on the 90 Ton Grove (17T-5690) had been experienced by various crane operators (E80 Error Code). Several attempts had been made by Fleet Maintenance personnel to identify and correct the problem with only temporary results.
Thursday, April 10, 2008		90 Ton Grove (17T-5690) was taken to the FH Fleet Maintenance garage due to LMI issues experienced the night before.
Friday , April 11, 2008		Fluor Hanford Fleet Services performed troubleshooting and calibration of the LMI system but wanted to have their most experienced mechanic (on this particular crane) look at it the following Monday April 14, 2008.

Date	Time 24 Hour 0000-2400	Activity
Monday, April 14, 2008	0635	FH Fleet Services reported that the crane would require further testing and were 90 percent confident it would be ready for use by the following morning April 15, 2008.
	0700	FH Fleet Services released the crane from the garage and reported it ready for use. However, it was not used that day.
Tuesday, April 15, 2008		The 90 Ton crane was placed in radioactive material area 10 by Washington Group International, Inc (WGI) Construction Forces to support AZ-102 pump installation.
Wednesday, April 16, 2008	0900	The Construction Field Lead reported problems with the Anti-Two-Block System and later reported the problem had been corrected. It was later determined that the Anti-Two-Block System travel lock had not been removed after relocating the crane. After removal of the travel lock that particular problem went away.
	1400	The WGI crane operator had received intermittent E80 error code issues with the LMI and the crane had lost several control functions. The riser shield plug had been removed requiring the open tank be posted a HRA and vapor control zone (Self Contained Breathing Apparatus required).
	1415	The FH Crane and Rigging Manager was notified and called for a mechanic to be sent out to address the problem with the crane.
	1430	Mechanic arrived at AZ Farm but indicated he was not Self Contained Breathing Apparatus qualified and could not enter the farm.
	1505	A second mechanic arrived at AZ farm and had to shave before donning the Self Contained Breathing Apparatus, resulting in additional delays.
		Later that night, mechanics removed the protective cover from the swing potentiometer computer board and told Construction Forces the problem was fixed and as long as they ran the crane with the cover removed it would be ok.
		The SSW determined the situation LTA and declared the crane inoperable.
Wednesday, April 16, 2008	1607	Email was sent from CH2M Buyers Technical Representative to the FH Crane & Rigging Manager requesting an "explanation as to the condition experienced, testing process, failure found, and what was done to correct the situation."

Date	Time 24 Hour 0000-2400	Activity
Thursday, April 17, 2008		The FH Crane & Rigging Manager provided the following information: • March 25, 2008 – Reset Error Code (E80) – 2.0 hours • April 11, 2008 – Trouble shot crane computer – 15.0 hours • April 12, 2008 - Calibrated PAT System Load Cells – 16.0 hours • April 17, 2008 – Troubleshoot Electrical Problem – 6.0 hours This information did not adequately address the questions asked by the Buyers Technical Representative.
Thursday, April 17, 2008		Photos were provided by CH2M of the crane with the swing potentiometer computer board protective cover removed.
Saturday, April 19, 2008 To Tuesday, April 22, 2008		A series of discussions occurred between FH and CH2M senior management on this maintenance issue and possible related concerns.
Monday, April 21, 2008		FH Fleet Services made contact with Coast Crane and verified that the probable cause of the problem was shorting of the small signal wires on the swing potentiometer computer board when coming into contact with the protective cover. This was due to the tight tolerances between the computer board and the cover.

Date	Time 24 Hour 0000-2400	Activity
Tuesday, April 22, 2008		FH Fleet Services performed the following: • With a representative from Coast Crane present, FH Fleet Services mechanics confirmed the problem was crushed wires to the swing potentiometer computer board due to the minimal clearance within the cover. The Coast Crane representative stated this problem has been seen before and the design of the LMI swing potentiometer computer board connector was changed back in 2004 partially for this reason. The old part number was 9364101848, which has been superseded by the new part number 6557100006. • Still with the representative in attendance, replaced the LMI swing potentiometer computer board connector and potentiometer with a newer version, which provided more clearance in the cover. • Performed extensive functional checks with FH Fleet Services/FH Construction Services mechanics and FH crane operators. No problems were identified. • Received fax and e-mail letter from Coast Crane representative stating this is a proper fix for this issue and that the problem has been seen before.
Thursday, April 24, 2008		The 90 ton crane was placed in a radioactive material area.
Friday, April 25, 2008		AZ-102 cover block installation pre-job and field work continued using the 90 ton crane.

CH2M-PER-2008-1091

Date	Time 24 Hour 0000-2400	Activity
Friday (OFF), May 16, 2008		ATCO Shop – Construction (FFS) fitters were assigned to perform cleaning (grinding) on 3 inch steel plates. This required the use of the 2 Ton electric jib hoist to pick up the plates and place them on the adjacent fabrication table.
		Using a mechanical lifting magnet (below the hook lifting device) suspended from the hoist they lifted the first plate and landed it on the table without incident.
		With the lifting magnet still attached to the hoist and the steel plate, the fitters completed grinding one side of the plate.
		The fitters attached a screw clamp lifting device to the plate so they could turn the plate over to grind the other side.
		The fitters hoisted the magnet lifter from the plate to set it on the table. As they were setting the magnet lifter on the table they thought they saw sparks between the table and the magnet.
		As the fitters were attempting to disconnect the hoist from the magnet they again saw sparks between the hoist hook and the lifting bail on the magnet.
		The fitters decided to place the magnet on the floor and as they were swinging it over the side of the table they again observed sparks between the magnet and the table.
		The fitters attempted to lower the magnet to the floor but the hoist began to make a grinding noise, the ATCO shop lights flickered, and the hoist stopped working (blown fuse) with the magnet suspended.
		The fitters contacted their supervisor
		The FFS supervisor made notifications to the Base Operations Shift Manager and CH2M construction management.
Monday, May 19, 2008		Fact finding meeting was held and determined a field investigation was necessary to determine the cause of the sparking.
		Hoist tagged out of service
Monday June 2, 2008		Red Arrow issued to control access to ATCO shop
Exact dates unknown		Base Operations issued troubleshooting plan and conducted troubleshooting.

Date	Time 24 Hour 0000-2400	Activity
		Troubleshooting revealed broken foot pedal spring on welding machine and missing grounding screw on the jib hoist.
		Corrective maintenance plan was initiated, deficient items corrected, and operational check performed on the jib hoist.
		Base Operations management determined hoist could be placed back into service.
Wednesday, June 25, 2008	0930	CH2M Hoisting & Rigging Committee discussed issue and agreed a load test should be performed on the hoist.
Monday, July 14, 2008		FH performed visual inspection and load test. Hoist made grinding noise with 50 percent load applied. TEST FAILED
		Hoist permanently removed from service

CH2M-PER-2008-1891

Date	Time 24 Hour 0000-2400	Activity
Saturday(Grave) September 20, 2008	Start of Shift	Pre job briefing held for POR104 valve box cover removal and valve repair work.
	0148	90 Ton Grove (17T-5690) moved out of AW Farm per route map and taken to C Farm.
		Crane located near POR104 valve box and outriggers lowered. The crane was placed in Mode B with the boom extended about 100 feet.
		POR104 cover plate removed and placed on ground without any crane problems.
	0338	FWS reports that smears taken from floor of POR104 have exceeded void limit of the RWP.
		C Farm access restricted
		FWS directed crane operator to leave the crane as is (load on ground, boom extended, and rigging attached to load and crane) and exit C Farm.
	0356	FWS reports all personnel have cleared PCM and are out of C Farm. FWS pursues path forward per TF-AOP-20.
	0502	Radiological Control first line supervisor and RadCon manager agree with path forward to allow crew to re-enter C Farm and re-install the valve box cover removed earlier.
	0530	Field crew briefed on re-entry plan and associated activities.
		Crew entered farm. Crane operator started the crane and re-centered the hook over the load but experienced difficulty while attempting to raise the cover plate. He then reset the crane computer LMI. After a few minutes he was able to lift the cover and swing it over the valve box.
		While attempting to center the plate over POR104 valve box (lowering the boom and raising the hook) the load suddenly lowered and shifted toward the crane ~ 6 – 8 inches, coming to rest on a hand rail. Two of the four slings went slack and personnel scrambled to get away from the plate.
		The uncontrolled load movement caused the crane computer LMI to display an error code and only allow those crane control functions that would render the crane more stable. This is a safety feature of the crane.

Date	Time 24 Hour 0000-2400	Activity
		Decision was made to attempt to raise the load with limited control function (boom up) in order to be able to swing over and set the plate on the ground. This was perceived to be necessary to get the crane in a safe condition.
		FWS and DL directed work to continue and did not enter TF-AOP-20 for hazardous crane condition.
		Crane operator boomed up and the cover plate became lodged underneath a scaffolding rail at the top of the barrier around POR104 valve box.
		FWS and crane crew "manhandled" the plate to free it from the barrier and the operator was able to swing over and lower it to the ground.
		Rigging was removed from the crane hook and the crane operator was allowed to make attempts to clear the computer so that operations could continue.
		After several attempts to reset the computer LMI the crane operator informed the DL and FWS that the crane had experienced a "major malfunction" and would require a mechanic to fix.
	0650	FWS reported the crane in C Farm (17T-5690) was not responding correctly after the plate was picked up and that the plate had been placed on the ground with the boom left extended (due to non-responsiveness of crane). Note: Crane was not tagged out of service.
	0730	Twenty (20) wide plastic was placed over POR104 pit opening and area posted air-borne radiation area
	0830	RadCon first line supervisor reported radiological surveys taken at temporary pit cover for POR104 showed no contamination.
	0845	Actions for TF-AOP-20 (entered for radiological) exit criteria completed. Exited TF-AOP-20 and restored access to C Farm.
		FWS contacted Fleet Maintenance supervisor to have a mechanic come out to C Farm and retract the boom on the 90 Ton crane. Note: PER not initiated at this time.
	~ 1100	Fleet Maintenance mechanic arrived on site and was told there was an error message on the LMI system and the boom needed to be lowered and retracted so the crane could be removed from the Farm.

Date	Time 24 Hour 0000-2400	Activity
	~1200	Mechanic entered C Farm and found the crane boom extended. He started up the crane and noted error codes on LMI but did not record the codes. The only code he remembered was E04.
		Mechanic manipulated the controls and LMI system until he was finally able to get the boom in a stowed position (retracted and lowered). He shut the crane down, restarted it, reset the computer. The crane operated properly.
		Prior to exiting C Farm the mechanic spoke with his supervisor and the day shift construction manager. At this time the construction manager informed the mechanic regarding the uncontrolled lowering of the load. This was the first time the mechanic had been given any information regarding what had actually happened with the crane. The mechanic and his supervisor agreed the crane should be taken out of the farm for further evaluation.
Sunday, September 21, 2008	0945	90 Ton crane (17T-5690) taken out of C Farm and over to the rigging loft (6290 building).
		The crane was inspected and load tested with 17000 lbs while in Mode A. Inspection and test satisfactory.
		JRG approves return to work
	1500	The crane re-entered C Farm and placed cover plate back on POR104 valve box.
	1830	SSW was secured for POR104 work.
Monday, September 22, 2008	0800	FSW initiated CH2M-PER-2008-1891 by direction from the construction manager. The PER identified the crane non-responsiveness but did not address the uncontrolled lowering and shifting of the load.
Wednesday, September 24, 2008		90 Ton Grove (17T-5690) was set up at rigging loft in same configuration as it was in on September 20, 2008 and operated in Mode B with no problems noted. Crane was left overnight in same configuration.
Thursday, September 25, 2008		Boom noted in the morning to have retracted ~ 6 inches overnight and was left in same configuration until afternoon.
		While attempting to retract the boom to stow the crane the boom suddenly slammed in (retracted) ~ 4-5 feet with enough force to move the entire crane ~ 5 inches on outriggers.
		Crane removed from service for full evaluation

Date	Time 24 Hour 0000-2400	Activity
Monday, September 29, 2008	1650	Follow-up evaluation of the initial event determined that a near miss event had occurred on September 22, 2008 (uncontrolled load movement) and an occurrence report was initiated.
Tuesday, September 30, 2008	0800	CH2M senior management cancelled occurrence report and determined the issue was responsibility of Fluor Hanford.
Monday, October 6, 2008	1400	Critique was held per WRPS management direction.

Attachment C: Training for Crane Operations

The following text is taken from *Hoisting & Rigging Training Program Description* revision 16.

4.2.1 Previous Training/Experience and Equivalencies

Documented evidence of previous training or experience may be accepted to meet training requirements in accordance with HNF-PRO-179, *Obtaining Training Equivalencies, Waivers, and Extensions* and DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual.* Note: HNF-PRO-197 allows for proficiency testing for exempting employees from specific areas of training. In addition, employees must complete applicable qualification/certification examinations.

4.2.2 Examinations

Written, oral and performance tests have an established pass and failure criteria and comply with DOE-HDBK-1205-97, *Guide to Good Practices for the Design, Development, and Implementation of Examinations* and DOE-HDBK-1206-98; *Guide to Good Practices for On-the-Job Training.* Written and oral examinations have a minimum passing criterion of 80 percent. On-the-Job evaluations or performance evaluations shall be graded on a SAT-UNSAT basis. Performance evaluations are used to validate that personnel have the knowledge and skills to operate equipment safely. Each evaluation Site Form used to document the on-the-Job Evaluation contains instructions to be followed during the performance, grading, and disposition of the evaluation.

4.3 On-the-Job Training

On-the-job training provides instruction and practice under the direct supervision of a qualified operator *or* a qualified H&R on-the-job training (OJT) Instructor. Qualified operators must meet the qualification requirements of this Training Program Description (Refer to sections 4.6 through 4.21). H&R OJT-Instructors shall complete the following qualification requirements:

4.21 Mobile Crane Operators Qualifications

4.21.1 Prerequisites

- Pass a crane operator physical examination (Refer to H&R Manual Section 4.2.3.1)
- Pass a substance abuse test (Refer to H&R Manual Section 4.2.3.2)
- Complete the Basic Crane and Rigging Safety Course (040784)
- Fire Extinguisher Training for Crane Operators (170661)

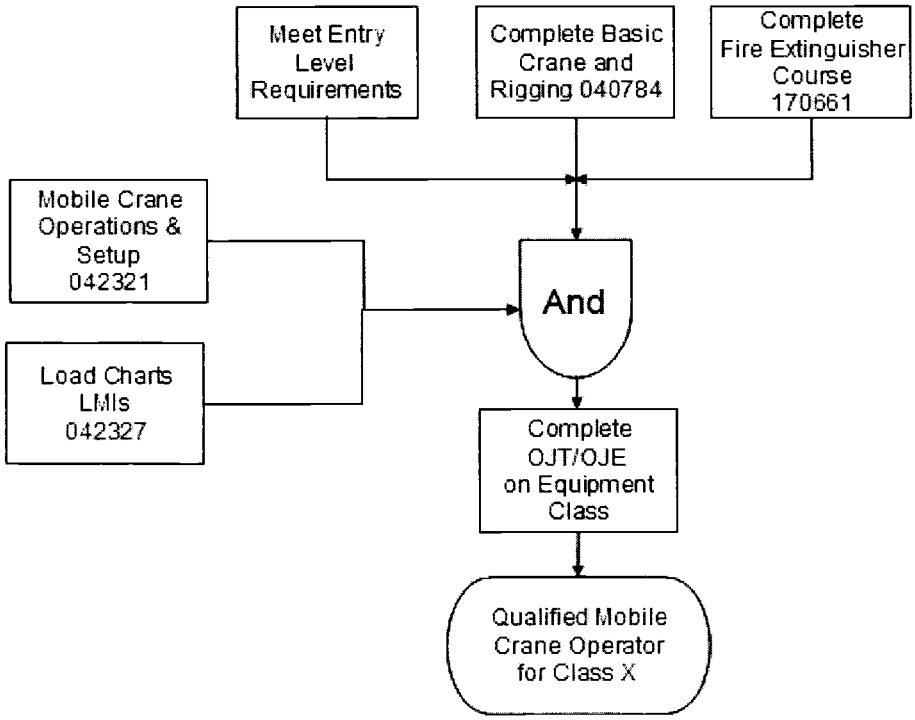
4.21.2 Technical Training

- Mobile crane operator qualification requires the completion of one of the following:
- Mobile Crane Operation & Setup (042321) **AND;**
- Load Charts & Load Moment Indicators (042327)
- Challenge examinations may be taken in lieu of the technical training as follows:
- Challenge Examination (042322) in lieu of Mobile Crane Operations Setup (042321)
- Challenge Examination (042328) in lieu of Load Charts & Load Moment Indicators (042327)

4.21.3 On-the-Job Training and Evaluations

Upon successful completion of the technical training the employee shall be given on-the-job training (OJT) on the mobile crane the employee will operate. Management may allow previously qualified or experienced personnel to bypass the OJT and proceed to a performance evaluation.
After the OJT has been completed or bypassed as allowed above, an on-the-job evaluation conducted by a qualified on-the-job evaluator shall be completed. The evaluator shall document completion of the employee's on-the-Job Evaluation on the appropriate Site Forms (see Attachment 1). Completion documentation required for the evaluation shall be signed by the employee, the qualified evaluator performing the evaluation, and forwarded to Training Records.

Figure 4.21.1 Mobile Crane Operator Qualification Logic Diagram



Mobile Crane Qualifications	Activity No.	TCR Form No	Evaluation Form	Answer Form
Class 1 Lattice boom truck	042621	A-6002-940	A-6002-942	A-6002-941
Class 2 Lattice boom crawler	042622	A-6002-943	A-6002-945	A-6002-944
Class 3 Telescopic boom (Single Control Station)	042623	A-6002-946	A-6002-948	A-6002-947
Class 4 Telescopic boom Truck (Multiple Control Stations)	042624	A-6002-949	A-6002-951	A-6002-950
Class 5 Commercial Truck- Mounted Crane – Telescoping Boom	044652	A-6004-386	A-6004-388	A-6004-389
Class 9 Telescoping Boom Fixed Control Station (Non-rotating cab)	044656	A-6004-390	A-6004-391	A-6004-392
LPG Propane Gas Bottle Change Out (As applicable)	044674	A-60020952	A-60020954	A-6002-953

5.0 Retraining

Retraining shall consist of satisfactorily completing the training requirements for that activity or equipment as specified in this TPD. Personnel shall be retrained when any of the following occurs:

- Equipment with new operating characteristics is acquired
- Existing equipment is modified, changing the operating characteristics
- Personnel receive an unsatisfactory performance evaluation
- Changes in standards or requirements occur that could affect safety
- Personnel are directly involved in a documented incident that compromises safety of personnel, equipment, or the environment in the performance of hoisting and rigging activities.

Attachment D: Common Cause Analysis

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Informal process used to contact FFS to obtain the 110 ton crane from Site crane and Rigging.	A formal process is used to contact FFS to obtain the 110 ton crane from Site crane and Rigging.	Informal versus formal.	There is a recommended corrective action for checkout, not yet implemented. This specific is a process improvement and is not considered a causal factor in the event. Recommend that a more formal process be established for obtaining a crane from the H&R custodian

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
FFS (Crane Operator, ironworkers, oiler) installed the 110 ton crane jib and reeved wire rope incorrectly. FFS crane operator questions reeve for crane and jib.	FFS (Crane Operator, ironworkers, oiler) installed the 110 ton crane jib and reeved wire rope correctly. Equipment reconfigured and reeved in accordance with manufacturers instructions. When confronted with an unknown situation, the manufacturer is contacted to ensure the correct information is used.	The wire rope was reeved incorrectly. Manufacturer not contacted and an incorrectly reeved crane was placed in service.	The current process reflects an informal process for installing infrequently used features on FH equipment. The jib had been detached from the boom years earlier and approximately two weeks prior to the job; the jib was obtained without informing the custodian. The jib was installed in accordance with manufacturer's instructions but no instructions existed for reeving of the main boom to accommodate the jib. Both the installation of the jib and the reeving of the jib are infrequent activity. These actions resulted in a crane being used that was reeved incorrectly. The crane operators accepted the condition based on a previous discussion with FH mechanics. Also felt that, considering how the crane was already set up he wasn't going to change it. There was no manufacturer information or diagram. Stop Work should have been request and work suspended.

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
CH2M SSW questions configuration.	CH2M SSW would have recognized that the lack of reeving instructions represented a less than adequate condition.	The less than adequate condition was not acted on.	The SSW is in the field and work should have been suspended long enough to verify appropriate crane configuration.
FFS (crane operator) performs Hanford Site Hoisting and Rigging Manual (HSHRM) 14.7.2.2 Frequent Inspection Steps (pre-use inspections) on crane. Crane is not configured to manufacturer's specifications'.	FFS (crane operator) performs HSHRM 14.7.2.2 Frequent Inspection Steps (pre-use inspections) on crane. Crane is configured to manufacturer's specifications'.	The test was performed with the crane configured outside of manufacturer's instructions. Unlikely full frequent inspection steps performed.	The criteria and documentation for a pre-use inspection is not clearly defined. HSHRM manual does not clearly state for the operator to exercise crane through full range of motion in the configuration expected to perform lift. If the Frequent (pre-use) inspection was performed on the full length of the wire rope intended to be used, it is likely that the wire rope would have stacked during the inspection. This inspection/test then was likely not performed.

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
FFS Crane Operator performs functional test per HSHRM: 14.3, item j (Test all controls at the start of a new shift. If any controls fail to operate properly, they require adjustment or repair before operations begin) and configures crane for lift, establishes boom length and angle.	FFS Crane Operator performs functional test per HSHRM: 14.3, item j (Test all controls at the start of a new shift. If any controls fail to operate properly, they require adjustment or repair before operations begin) and configures crane for lift, establishes boom length and angle.	None	None
FFS craftsmen attaches rigging to connect MRT Fold Track to 110 ton crane and FFS Crane Operator begins lift of MRT Fold Track I.	FFS craftsmen attaches rigging to connect MRT Fold Track to 110 ton crane and FFS Crane Operator begins lift of MRT Fold Track I.	None	None
Load dropped about 18 inches.	Load would not have dropped	Load dropped	This raised an immediate question as to crane operability.
Work paused.	Stop work initiated, notification made and abnormal procedures implemented.	Formal stop work, work suspended pending incident evaluation/investigation.	Pausing work consistent with expectations. Stop work should have been initiated along with formal abnormal procedures, etc.

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
SSW contacts shift office, no log entry made.	SSW contacts shift office and log entry is made.	Log entry made.	When work is paused due to a crane and rigging event and the shift office is notified a record should be made of the event. Red arrow entry taking crane out of service pending crane evaluation. Documentation of significant events is anticipated.
SSW contacts shift office approves lowering riser assembly portion of MRT Fold Track back to ground	SSW contacts shift office of abnormal conditions/events with equipment, notifications and abnormal communication/procedures conducted.	A crane with an unknown problem is operated with persons in close proximity to the load.	Obtaining approval to proceed is consistent with expectations. Standard practice is to place load on the ground. This decision is based on incomplete information relative to crane condition and causal factors. Work should have been stopped and the area secured, SME contacted and re-entry process developed.

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Crane operator and mechanic notices the wire rope was stacking and respooled the wire rope prior to retracting boom and securing crane.	Take the Crane out of service pending resolution and contact shift office of abnormal conditions/events with equipment, notifications and abnormal communication/procedures conducted.	Crane was kept in use.	Work should have been stopped and the area secured, SME contacted and re-entry process developed. Stop Work should have occurred at this time. Work package, procedures abnormal event communications should be started.
Informal discussions and notifications made, contacted site Crane and Rigging and other applicable personnel and organizations.	Formal discussions and notifications made, contacted site Crane and Rigging and other applicable personnel and organizations.	Formal versus informal, no data on what happened, if anything for this step.	Current expectations are undefined and there is no formal process. When crane malfunctions occurred the custodian should always be contacted. There is some of informal process not clear not consistent not understood by all, formalization should be path forward in this area.
FFS Held daily post job.	FFS Held daily post job.	None	None

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
SME not contacted.	SME Contacted.	SME Not Contacted	There is no specific SME contact list. Following the post job the SSW should have recognized the need to contact the SME.
CH2M Held fact finding without engineering SME and rigging engineer that developed special lift plan.	Crane incident evaluation/investigations and fact finding include engineering SME and rigging engineer that put the developed special lift plan.	No engineering involvement in event investigation.	The current fact finding process does not include a group meeting as does a critique. The use of the informal fact finding process bypasses the attributes of the critique process that requires involvement of SMEs. This was a special lift. The load dropped. Engineering involvement should have been required.
Coast Crane provided verbal instruction on how reeve should be configured for crane with jib.	Coast Crane provided verbal instruction on how reeve should be configured for crane with jib.	None	None
Site Crane and Rigging updates 110 ton crane manual to address proper reeve for crane and jib.	The manual already had updates in it.	Manual is incomplete	No configuration control on operator's manual. The operating manual for the crane was incomplete.
FFS Re-reeved idler (under to over) in 241-C Tank Farm.	FFS Re-reeved idler (under to over) in 241-C Tank Farm.	None	None

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
FFS and Site Crane and Rigging performed limited mobile crane and wire rope inspections	Full length of rope would have been inspected per ASME B30.5	Only exposed portion of rope was inspected.	If the entire length of wire roper had been inspected, the loose wrapping of the first layer (root cause of wire spooling) would have been discovered
CH2M Safety SME developed recommendations for returning crane to service at TOC.	SME would have referred to an existing TOC process (program plan) rather than generating an ad-hoc set of analyses and criteria	Formal versus informal process for returning cranes to service in TOC.	The process by which the actions were defined, communicated, and implemented was informal. There is no formal protocol defined within WRPS on what defines a hoisting and rigging event, what investigating protocol is, and who is responsible for returning a crane to service
CH2M Engineering performed shock loading evaluation.	CH2M Engineering performed shock loading evaluation.	None	None
Informal specific actions for TOC recommended by Safety SME completed.	Formal specific actions for TOC recommended by Safety SME completed.	Formal versus informal.	As noted above, the actions were completed, but not documented formally.
CH2M management determined an adequate corrective strategy had been implemented.	Full recommendations of SME investigated	Not all actions were completed.	Evaluating the adequacy of corrective actions and acceptance of risk is a normal part of business operation. Value judgment on the part of Management

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
SME and other resources were under considerable "pressure" to perform specified actions return the equipment to service and complete the C-110 milestone.	Workers complete specified actions without management pressure.	Workers were under pressure to complete activities to return crane to service	SWE expectations support the proper methodology, but this is not always followed. Pressure to complete the work quickly can contribute to establishing an error prone environment
FH Hoisting and Rigging concurred with returning crane to service.	Defined process for returning crane to service followed with TOC concurrence.	No formal determinations of approval used.	No formal process exists for contractor interface associated with returning a crane to service. Approval of return to service should include documented analysis of the problem and corrective actions, approval signatures and retention of this information.
FFS re-attempted lift with observer specifically watching drum for spooling. Spooling observed while taking tension on line. FFS stopped lift, secured crane.	FFS re-attempted lift with observer specifically watching drum for spooling. Spooling observed while taking tension on line. FFS stopped lift, secured crane.	None	None
Safety, Engineering, Site Crane and Rigging recommend bringing 110 ton crane to 6290 facility.	Safety, Engineering, Site Crane and Rigging recommend bringing 110 ton crane to shop.	None	None

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
At the rigging loft, Site Crane and Rigging placed 110 ton crane in "Farm" configuration with jib, correctly reeved and noted that wire rope did stack during operation in "Farm" configuration.	At the rigging loft, Site Crane and Rigging placed 110 ton crane in "Farm" configuration with jib, correctly reeved and noted that wire rope did stack during operation in "Farm" configuration.	None	None
Site crane and Rigging pulled out entire length of wire rope; noted first layer not wrapped tight and determined this to be the cause of the rope stacking.	Site crane and Rigging pulled out entire length of wire rope; noted first layer not wrapped tight and determined this to be the cause of the rope stacking.	None	None
Site crane and Rigging re-wrapped first layer and cycled numerous times under load.	Site crane and Rigging re-wrapped first layer and cycled numerous times under load.	None	None
Informal communication from FH Crane and Rigging cleared "Warning" tag from crane, sent email to CH2M project management stating 110 ton crane was "ready to be put back into service."	Formal communication from FH Crane and Rigging cleared "Warning" tag from crane, checklist, stating 110 ton crane was "ready to be put back into service."	Formal versus informal process followed (checklist).	No formal process exists. Approval of return to service should include documented analysis of the problem and corrective actions and approval signatures.
241-C Farm Project management and FFS management authorized 110 ton crane to return to service for 241-C-109 MRT Fold Track installation.	More formal concurrence/rejection	Formal versus informal process followed review prior to returning to service inside tank farm facilities.	No formal process exists for TOC. The lack of a formal process for TOC and criteria for returning a crane to service reflects a potentially deficient condition.

CH2M-2008-0732			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Returned crane to 241-C Farm and FFS performed lift with 110 ton crane without incident.	Returned crane to 241-C Farm and FFS performed lift with 110 ton crane without incident.	None	None

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
Errors codes on three previous occasions occur and documented events of E80 (Error code on LMI) for 90 ton crane, not reported or communicated.	Errors codes on three previous occasions occur and documented events of E80 (Error code on LMI) for 90 ton crane, reported or communicated to applicable personnel.	Continuing LMI error code should have been reported to applicable personnel/organizations, equipment not repaired.	Maintenance craft had identified the problem and personnel used short term fixes to continue crane operation. In order for FH to be contacted by the crane manufacturer, it requires a paid subscription to an update notification service. (CRANE CARE), subscription not purchased. Manufacturer had issued a service bulletin in 2004 identifying the E80 error code source and proper corrective action. FH maintenance was not aware of this service bulletin as subscription service not purchased. It was discovered April 21, 2008 when maintenance contacted manufacturer.
AZ Farm WGI crane operator received E80 error code, stopped crane operation, April 16, 2008.	AZ Farm WGI crane operator received E80 error code, stopped crane operation, April 16, 2008.	None	None
WGI operator retracted 90 ton crane and attempted to reset computer.	WGI operator retracted 90 ton crane and contacted mechanic.	Crane operator exceeded responsibility.	Evaluate during why analysis.

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
Error code does not clear, AZ Farm calls the equipment custodian to fix crane.	Error code does not clear, AZ Farm calls the equipment custodian to fix crane.	None	None
Site crane and rigging contacted fleet maintenance, Mechanic arrives at AZ Farm.	Site crane and rigging contacted fleet maintenance, Mechanic arrives at AZ Farm.	None	None
Mechanic does not enter AZ Tank Farm due to mask qualification issues.	Mechanic enters AZ Tank Farm under mask qualification requirements.	Mechanic mask qualifications are of concern entry not granted until resolved.	Farm was posted as vapor control zone, due to planned operations. Mechanic mask re-qualified, however computer at mask station are not updated with current data on mechanic.
Fleet maintenance dispatched second mechanic to tank farms.	Fleet maintenance dispatched second mechanic to tank farms.	None	None
CH2M asked Fluor maintenance to schedule a mechanic for overtime to repair the crane that day because of specific job site conditions.	CH2M asked Fluor maintenance to schedule a mechanic for overtime to repair the crane on same day.	Job site as high radiation area had been created by open riser.	High priority work, high radiation area had been created by open riser. Significant drivers to restore containment

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
FH mechanic determines error codes caused by swing proximity sensor, removes metal cover of sensor location on crane, short circuit contact of sensor wiring and cover. Reported in past field corrected.	FH mechanic determines error codes caused by swing proximity sensor, stops work and issues proper work orders to repair crane.	History of error codes and field fixes of short circuit contact between sensor and cover plate on crane.	Mechanic had a history of problems with this crane sensor and error codes. Interim repair measures had been successful in the past, i.e. tape installed on April 10, 2007. No corrective actions or work order issued to properly repair short circuit.
Fleet maintenance mechanic recommends to leave the cover off and operate the crane	Fleet maintenance mechanic recommends that permanent corrective actions be implemented.	Temporary fix to leave cover plate over sensor off and operate crane recommended.	Interim repair measures had been successful in the past tape installed on April 10, 2007. Recommendation was a temporary fix based on perceived need to get the tank farm configuration restored. No corrective actions or work order issued to properly repair short circuit.
SSW asked mechanic if he could guarantee that the problem would not recur.	SSW asked mechanic if he could guarantee that the problem would not recur.	None	None
Mechanic indicated he couldn't ensure non-recurrence.	Mechanic indicated he couldn't ensure non-recurrence.	None	None
SSW declared the 90 ton crane inoperable.	SSW declared the 90 ton crane inoperable.	None	This specific action leads to an overall resolution of the issue.

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
Critical lift was revised to utilize the 70 ton crane for installing the pump adapter.	Critical lift was revised to utilize the 70 ton crane for installing the pump adapter.	None	None
FWS directed crane removed from immediate area at AZ farm, and arrangements were made for the 70 ton crane.	FWS directed crane removed from immediate area at AZ farm, and arrangements were made for the 70 ton crane.	None	None
WGI crane operator uses 70 ton crane to install pump adapter plate.	WGI crane operator uses 70 ton crane to install pump adapter plate.	None	None
On subsequent 90 ton crane troubleshooting, FH mechanic discovered issue where contact between a tight fitting potentiometer and the casing was causing an electrical short.	On subsequent 90 ton crane troubleshooting, FH mechanic discovered issue where contact between a tight fitting potentiometer and the casing was causing an electrical short.	None	None

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
Fleet maintenance services contact Coast Crane and it was communicated that the part had been modified by the manufacture to correct the problem.	Fleet maintenance services have communication with Coast Crane for crane equipment modification, maintenance manual updates, etc.	Modifications and update information not known, part not ordered for repair of crane equipment.	Correct information would have been provided and part replaced. Fleet maintenance should have been notified about this service bulletin (design improvement). The service bulletin was 4 years old and had not been communicated to the equipment custodian.
Coast crane sent memo to FH recommending replacing the potentiometer.	Coast crane sent memo to FH recommending replacing the potentiometer.	None	None
Coast crane rep in attendance, FH replaced the LMI switch potentiometer computer board connector and the potentiometer with a newer version.	Coast crane rep in attendance, FH replaced the LMI switch potentiometer PC board connector and the potentiometer with a newer version.	None	None
Performed an extensive functional check of the 90 ton crane and LMI. Fleet services, FFS construction services, and FH Crane operators in attendance. No problems identified.	Performed an extensive functional check of the 90 ton crane and LMI. Fleet services, FFS construction services, and FH Crane operators in attendance. No problems identified.	None	None

CH2M-2008-0835			
What did (or did not) happen	**What should have happened**	**Difference**	**Analysis**
Performed additional functional checks with WGI crane operator, crane lubed and returned to service.	Performed additional functional checks with WGI crane operator, crane lubed and returned to service.	None	None
Informal process for ensuring corrective actions are completed and implemented for crane incidents approves reuse of 90 ton crane. CH2M Safety SME sent email to senior staff, operations management and construction management indicating that the crane was repaired and ready to return to service. 90 ton crane moved to tank farms. 90 ton crane completed planned work.	A formal systematic process consisting of communications, procedures, reviews and approvals for crane incidents and return to operations removed from work activities authorizes the return of the 90 ton crane to tanks farms. 90 ton crane moved to tank farms. 90 ton crane completed planned work.	Informal process is used because no formal process exists.	This was an uncommon action taken as a personal initiative and not one captured in a formal process. No common formal process for crane incidents. A formal process for returning equipment to service is needed. Crane incidents, investigations, notifications, criteria, review and approval processes are not in place to ensure that applicable participants are used at each stage of the process.

CH2M-2008-1091			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
2 ton ATCO Shop Jib Hoist last visual inspected on August 30, 2007.	2 ton ATCO Shop Jib Hoist last visual inspected on August 30, 2007.	None	None
Hoist operated on May 16, 2008 to lift 3 inch plate.	Hoist operated on May 16, 2008 to lift 3 inch plate.	None	None
While operating hoist and associated equipment, operator removed magnet from plate. Workers observed sparks between magnet and table.	No sparks are present.	Sparks were present on May 16, 2007 operation, while magnet was removed from plate.	Because observation was a visual there is uncertainty at this point the workers were not sure if sparks did occur. Stop Work should have occurred at this time.
Worker reinitiates work and during this second attempt to remove magnet from plate workers observed sparks between magnet and table.	While operating hoist and associated equipment, operator removed magnet from plate.	Sparks occur during this second attempt to remove magnet from plate and are confirmed by workers.	Workers clearly observe a visual occurrence sparks did occur. Stop Work should have occurred at this time.

CH2M-2008-1091			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Workers pick magnet up again (third time), hear grinding noise from hoist motor.	While operating hoist and associated equipment, operator removed magnet from plate.	Grinding noise from hoist motor is heard by workers.	Workers clearly observe a visual occurrence sparks did occur. Stop Work should have occurred at this time. Speculation is that some amount of current was passing through the body of the hoist for a long time. The affects on the bearings and gears, while not known, is considered a likely causal factor for the grinding sound.
Magnet contacts the edge of table, spark observed.	While operating hoist and associated equipment, magnet contacts table.	Sparks are observed when magnet makes contact with table.	Stop Work should have occurred at this time.
While operating hoist and associated equipment to move load, facility lights flicker.	While operating hoist and associated equipment to move load, facility lights do not flicker.	Lights flickered	Speculation crane or other equipment drawing more current than usual to move the load.
While operating hoist and associated equipment, jib hoist stops working.	While operating hoist and associated equipment jib hoist operates normally.	Interruptions of power or equipment malfunction of jib hoist.	Power walk down/review finds failure of equipment caused by blown fuse.

CH2M-2008-1091			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
While operating hoist and associated equipment, workers decide to notify base operations shift manager and construction mgmt of the problems encountered during work activities	While operating hoist and associated equipment, workers encountered abnormal conditions/events with equipment, notifications and abnormal communication/procedures conducted.	None	Multiple occurrences and final power lost to jib hoist triggers abnormal event communication to be conducted versus a single event should have been sufficient.
Jib Hoist tagged out of service.	Jib Hoist tagged out of service.	None	None
On May 19, 2007 a fact finding investigation into problems encountered with jib hoist and associated equipment operations for work activities on May 16, 2007.	On May 19, 2007 a fact finding investigation into problems encountered with jib hoist and associated equipment operations for work activities on May 16, 2007.	None	None
A trouble shooting plan is developed as part of corrective actions from fact finding investigation.	A trouble shooting plan is developed as part of corrective actions from fact finding investigation including applicable personnel and organizations participation and approvals.	Not all personnel are involved in process.	Documented in WFO-WO-08-0002 (electrical minor work verbal). Electrical SME not contacted.
Corrective Maintenance Work package developed, implemented and completed for jib hoist and associated equipment.	Corrective Maintenance Work package developed, implemented and completed for jib hoist and associated equipment.	None	None WFO-WO-08-1374 shop repair of electrical deficiencies.

CH2M-2008-1091			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Following corrective actions completion jib hoist placed back in service.	Following corrective actions completion jib hoist to be placed back in service after appropriate personnel and organizations approvals are received.	Not all personnel are involved in process.	Approval of return to service should include documented analysis of the problem and corrective actions, approval signatures and retention of this information. SME was told by management to not become involved in this event ("It's just an electrical problem and not a rigging event") Manager lacked clear understanding of requirements for hoisting and rigging equipment Alternate equipment custodian not designated/qualified for long term absence of equipment custodian. No, effective process for designated/qualified alternate equipment custodian not in place.
Crane placed back in service.	Crane placed back in service following load test and inspection.	No tests performed.	This introduced as new hazard to the facility.

CH2M-2008-1091			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
June 25, 2008, CH2M Hoisting and Rigging Committee discussed Jib Crane Issue. DECISION: Do a Load Test.	June 25, 2008, CH2M Hoisting and Rigging Committee discussed Jib Crane Issue. DECISION: Do a Load Test.	None	None
Crane placed back in service.	Crane placed back in service following recommendation of CH2M Hoisting and Rigging Committee decision to complete load test.	July 14, 2008. Fluor crane and rigging did visual inspection and Load Test, Jib Hoist began making noises at 50 percent load, test halted (failed) Jib Hoist taken out of service.	Following investigation, corrective actions and full participation of SME and other key personnel equipment problems identified. Visual inspection passed, load test failed.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
On September 20, 2008 a pre-job briefing held (Saturday morning graveyard).	On September 20, 2008 a pre-job briefing held (Saturday morning graveyard).	None	None
90 ton crane obtained from AW farm (set up for another job) at 0148.	90 ton crane obtained from AW farm (set up for another job) at 6290	Time delay in obtaining crane, uncertainty of recent use.	Crane would have been available for planned operation, would not have had to remove the crane from another tank farm.
Work progressed, removed lid to POR-104. Crane boom deployment configuration was in Mode B.	Work progressed, removed lid to POR-104 Crane boom deployment configuration was in Mode B.	None	None
Work suspended due to contamination found in POR-104 at 0356.	Work suspended due to contamination found in POR-104 at 0356.	None	None
Turned the crane off, left the farm, load on the ground, boom extended.	Turned the crane off, left the farm, load on the ground, boom extended.	None	None Potential for improvement in the procedure, to evaluate heavy equipment conditions, to prevent a potentially unsafe situation upon re-entry.
Permission obtained to re-enter farm, place POR104 lid in place, and retract crane boom at 0502.	Permission obtained to re-enter farm, place POR104 lid in place, and retract crane boom at 0502.	None	None Re-entry was based on the radiological conditions only, no SME consulted for crane condition.
Re-entry briefing at 0530.	Re-entry briefing at 0530.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Crane operator restarted crane and rebooted computer approximately 0615. Three to five minute delay in getting load lifted. LMI giving error codes that were reset by the crane operator.	Crane operator restarted crane and rebooted computer approximately 0615. Crane performs lift without error codes'	Error codes on crane	No – error codes happen frequently, and this is assumed to be "normal." The LMI is assumed to be malfunctioning. Crane operator encountered difficulty in initially lifting the load. This was overcome, but not questioned by the crew. No, maintenance craft had identified the problem and personnel used short term fixes to continue crane operation. No corrective actions or work order issued to properly repair short circuit.
Lifted Load using hoist. Swung plate over POR104, rotating boom, hoisting up while booming down simultaneously.	Lifted Load using hoist. Swung plate over POR104, rotating boom, hoisting up while booming down simultaneously.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
When clear of environmental barrier below the plane of the barrier, the boom slid in and the plate dropped 6-8 inches and moved horizontally towards the crane.	When clear of environmental barrier below the plane of the barrier, the load remains controlled and at rest.	Uncontrolled descent of load.	Equipment malfunction – the cause was not understood at time of incident.
Error code received on crane unable to boom down or hoist up. Could swing and boom up and hoist down	Crane operates properly and the operator recognizes the reasons for the observed condition.	Crane malfunction, operator not familiar with specific crane design that could lead to this condition.	Crane operators lack detailed training on new crane LMI and specific attributes of the crane. More training should have been provided to the crane operators – there are specific attributes for the performance of the 90 ton and 75 ton cranes, re: thermal contraction in the extension cylinders. Design characteristic in manual is neither highlighted nor listed as a caution or danger. Training provided was less than adequate.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
During repositioning of the load to place on ground, the load snagged on environmental barrier (tube and clamp scaffold) and had to be freed by the work crew and crane.	During reposition of the load to place on ground the load snags on environmental barrier and crane operator frees the load without work crew support.	Workers close to the load being moved by a malfunctioning crane, increase risk to workers.	One option should have been given to abandoning the load, backing off the crew and evaluating the lift (no confidence in the crane). There was a sense of urgency is getting the load put on the ground (safest thing to do at the time).
Using available controls crane operator set load on ground and work crew un-hooked the load.	Using available controls crane operator set load on ground and work crew hooked the load.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Crane operator tried again to over ride, tried to reboot the computer. LMI had cut off functions from crane operator for yet to be determined reason/error codes.	Crane left in as is condition for investigations into error codes and problems with operations.	Multiple tries and reboots can change potential insight on error codes and problems with crane operation.	There is no guidance on this type of situation when dealing with crane operations. There is no process to investigate and determine problems in the field and potentially in maintenance shops. The determination to not leave crane in existing condition for an investigation is existing practice. In addition determining save configuration is not listed as a criterion therefore defaults to workers and crane operates experience on when to leave a suspended load. Practices call for lowering loads. Evaluation of this practice is needed.
DL informed FWS crane was not operational – major malfunction, said it would require a mechanic to fix.	DL informed FWS crane was not operational – major malfunction, said it would require a mechanic to fix.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
FWS directed crane crew to secure operations, Crane was off, boom extended ~100 feet, rigging not attached to load.	The crane was properly secured for incident/operational/maintenance investigation and evaluations and safety tag applied to crane for removal from service.	No tag was applied, no process to determine configuration, and ensure evaluations and investigations of incidents data is not compromised.	The crane operator should have tagged the crane out of service in this situation. Refresher training for the requirements of 7-GN-097 needs to be performed.
Held a short stand up discussion in the farm. FWS understood crane was malfunctioning.	Held a short stand up discussion in the farm. FWS understood crane was malfunctioning.	None	None
Crane Crew left the farm.	Crane Crew left the farm.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Formal post-job was not held.	Formal post job held.	Documented conditions prior to crew leaving on Saturday morning.	More information for subsequent work crews, information for mechanic would have been available. The work package in question was not a complex package, and a daily post-job was not required. While the work was not deemed complex the determination cannot be evaluated as the current work planning procedure provides no distinct criteria for what work is "complex." Crane configuration and impacts on after incident changes to work site and crane needs to be developed for minor to significant crane incidents and potentially other vehicle incidents.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Crane is not tagged out of service.	Crane tagged out of service.	Crane not tagged out of service	The crane is available for service if needed, although not in an operable condition. If crane is used as in service prior to incident evaluation/investigation data essential to safety and worker protection could lost or compromised. Equipment damage or personnel injury could occur if incident is significant or if it impacts safety features of crane operations and procedural compliance for work activity.
FWS contacted Fleet maintenance to get a mechanic at 0914.	FWS contacted Fleet maintenance to contacted equipment custodian, and have them contact mechanic supervisor.	Contacted maintenance directly.	Routine process is to go through the Crane and Rigging to get to fleet maintenance. This was a weekend, so personnel with expertise on crane operations and maintenance, etc could be LTA.
FWS contacted production control manager, summarized events.	FWS contacted production control manager, summarized events.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Formal turnover to next FWS/work crew.	Formal turnover new work crew contacts off-going FWS for more information in planning new work package.	No contact.	There was no oncoming crew scheduled so this does not reflect a failure. The Work Record provides a means of communicating in this scenario.
Available FWS assigned to retract boom and remove crane from farm.	Available FWS assigned to retract boom and remove crane from farm.	None	None
Incoming FWS is not aware of the load drop. Only aware that the load banged the handrail and something was wrong with the crane.	Incoming FWS is fully informed of previous work activities involving crane and problems.	FWS not informed.	This resulted in an error likely situation where the personnel involved in a process lacked full understanding of the condition of the equipment. Processes exist to allow communication but the degree of detail in the communications was not sufficient to provide complete understanding. The personnel involved had left the site due to overtime limitations. The crane operator was unavailable at Plutonium Finishing Plant.
Mechanics arrive, briefed by FWS.	Mechanics arrive, briefed by FWS.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Mechanic started the crane up and it had error codes in the LMI. Mechanic worked with controls and was able to get the crane functional. Recommended crane be removed from farm for trouble shooting.	Mechanic has diagnostic tools, skills, and knowledge to access crane computer and resolve scenario.	Mechanic lacked diagnostic tools, skills, and knowledge associated with the computer systems on newer cranes.	Crane mechanics have not been provided with adequate training or tools to work with the newer sophisticated LMI systems. This was captured on an HPI assessment and corrective actions implemented by FH. There is no guidance on this type of situation when dealing with crane operations. There is no process to investigate and determine problems in the field and potentially in maintenance shops. If crane is used as in service prior to incident evaluation/investigation data essential to safety and worker protection could lost or compromised.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Mechanic received more details on crane malfunction and indicated he would not certify the crane to return to service without more investigation. He said the crane needed to be removed from the farm and checked out in more detail. Said he wanted to talk to crane operator.	Mechanic has diagnostic tools, skills, and knowledge to access crane computer and resolve scenario one the same day of incident.	Crane operator not contacted or communicated with until following Monday.	Delays in trouble shooting crane incidents impact work, fee, and compliance schedules within the tank farm organization. Delays in having personnel available 24/7 can lead to others trying out informal process to keep work on schedule. Delays in talking to key personnel in response to crane incidents can lead to misinformation or compromised data collection.
FWS spoke with mechanic and maintenance supervisor. Mechanic reiterated that crane was not ready to use. All concurred to send crane to the shop.	FWS spoke with mechanic and maintenance supervisor. Mechanic reiterated that crane was not ready to use. All concurred to send crane to the shop.	None	None

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Fact finding not held	Fact finding held.	No fact finding.	The process as implemented did not result in a fact finding or critique in a situation where a significant process upset with a crane occurred. There is no documentation to define why a fact finding or critique was not held, however resources were available and all management focus was directed and revising package, getting planning meetings held, and returning to work.
AJRG held Saturday PM to approve revised work package. No discussion of crane event.	AJRG not held until hazards involved in the job were understood and mitigated.	AJRG was held, package approved by management without any discussion of event.	This reflects a focus on production with no evaluation of the hazards encountered by the workers in the field. Included in the determination was that all qualified supervisors within the organization had either timed out on overtime or were unavailable and a FWS was brought in from Base Operations.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Sunday morning Crane and rigging FWS and crew test crane operability. Crane returned to service.	Full diagnosis, interview with crane operator, and investigation of event.	This was done without a full diagnosis of crane, event investigation, or interview with crane operator.	As previously discussed above, equipment was returned to service without understanding the event.
Monday PER written that did not convey the significance of the event or include any details of uncontrolled load movement.	PER written that captured the event significance	The PER did not accurately describe the problem in the "Description Of Concern Or Problem" block of the PER.	Personnel completing the PER electronic form do not always blocks understand how to convey this type of an event. Shift Office PER screening LTA, did not ask the right questions. PER not routed to the appropriate people for screening. PER did not adequately capture the safety implications of the situation. Data form should be modified to have a field for significance of the event, and a check-box requiring review by applicable equipment custodian or safety (crane and rigging) SME.

CH2M-2008-1891			
What did (or did not) happen	**Event Free Condition**	**Difference**	**Analysis**
Monday Fact finding initiated two weeks after event.	Immediate fact finding initiated	Time delay	Event not investigated with key personnel available. Demonstrates lack of significance or priority assigned to the event.

Attachment E: Thermal Contraction Warning and Crane Manual Text

CAUTION:

RT890 Grove; 17t-5690
and
RT875 Grove; 17t-5688

Thermal contraction happens when the hydraulic oil is heated inside the telescope cylinders and then remains static for a period of time allowing the column of oil to cool. The lower that the ambient temperature is during this static condition, the greater the amount of contraction. If the boom sections cannot slide freely while the oil is contracting, there is a void created between the cylinder piston and the contracted column of oil. Eventually either when the boom is elevated or the boom weight overcomes the friction; the boom drops in until each cylinder's piston compresses its column of oil. This crane's boom contains 3 cylinders plus the fly section which operates by cables attached to the outer mid section. The fly section will contract at the same rate as the outer mid section.

The stick – slip condition which can be caused by lack of lubrication on the outside and inside of all boom sections. Also if the boom is positioned at lower boom angles during this oil cool down period, the void inside the cylinder is created. This crane utilizes the Megaform style boom which has more wear pad surface area inside the mouth and surrounding the rear of each boom section creating added friction in comparison to other boom designs.

Actions that must be taken to reduce the risk of a similar incident.

1. **If the boom is left extended for any period of time the operator must charge the boom cylinders by pushing the extend pedal to replenish the system.**

2. **When holding loads for an extended period of time, the operator can periodically push the telescope extend pedal to replenish the void of oil while watching the L.M.I. system's boom length display for movement.**

Sling jib sections from the main chords or the end fittings.

When assembling and disassembling jib sections, use blocking to adequately support each section and to provide proper alignment.

Stay outside of jib sections and lattice work.

Watch for falling or flying pins when they are being removed.

Cold Weather Operation

Cold weather operation requires additional caution on the part of the operator.

Check operating procedures for cold weather starting.

Don't touch metal surfaces that could freeze you to them.

Clean the crane of all ice and snow.

Allow ample time for hydraulic oil to warm up.

In freezing weather, park the crane in an area where it cannot become frozen to the ground. The drive line can be damaged when attempting to free a frozen crane.

If applicable to your crane, frequently check all air tanks for water in freezing weather.

If applicable to your crane, always handle propane tanks according to the supplier's instructions.

Never store flammable materials on the crane.

If cold weather starting aids are provided on your crane, use them. The use of aerosol spray or other types of starting fluids containing ether/volatiles can cause explosions or fire, and should not be used on engines with electric intake heaters.

TEMPERATURE EFFECTS ON HYDRAULIC CYLINDERS

Hydraulic oil expands when heated and contracts when cooled. This is a natural phenomena that happens to all liquids. The coefficient of expansion for API Group 1 hydraulic oil is approximately 0.00043 cubic inches per cubic inch of volume for 1°F of temperature change. **Thermal contraction will allow a cylinder to retract as the hydraulic fluid which is trapped in the cylinder cools.** The change in the length of a cylinder is proportional to the extended length of the cylinder and to the change in temperature of the oil in the cylinder. For example, a cylinder extended 25 feet in which the oil cools 60°F would retract approximately 7 3/4 inches (see chart below). A cylinder extended 5 feet in which the oil cools 60°F would only retract approximately 1 1/2 inches. The rate at which the oil cools depends on many factors and will be more noticeable with a larger difference in oil temperature verses the ambient temperature.

Thermal contraction coupled with improper lubrication or improper wear pad adjustments may, under certain conditions, cause a "stick-slip" condition in the boom. This "stick-slip" condition could result in the load not moving smoothly. Proper boom lubrication and wear pad adjustment is important to permit the boom sections to slide freely. Slow movement, of the boom may be undetected by the operator unless a load is suspended for a long period of time.

If a load and the boom is allowed to remain stationary for a period of time and the ambient temperature is cooler than the trapped oil temperature, the trapped oil in the cylinders will cool. The load will lower as the telescope cylinder(s) retracts allowing the boom to come in. Also, the boom angle will decrease as the lift cylinder(s) retracts causing an increase in radius and a decrease in load height.

This situation will also occur in reverse. If a crane is set up in the morning with cool oil and the daytime ambient temperature heats the oil, the cylinders will extend in similar proportions.

The chart below has been prepared to assist you in determining the approximate amount of retraction/extension that may be expected from a hydraulic cylinder as a result of change in the temperature of the hydraulic oil inside the cylinder. The chart is for dry rod cylinders. If the cylinder rod is filled with hydraulic oil, the contraction rate is somewhat greater.

NOTE: Operators and service personnel must be aware that load movement, as a result of this phenomena, can be easily mistaken as leaking cylinder seals or faulty holding valves. If leaking seals or faulty holding valves are suspected to be the problem, refer to Service Bulletin 98-036 dealing with testing telescope cylinders.

Attachment F: Corrective Action Plan

CC-CA-01
Modify TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-01	
Actionee	Tim Kramer
Due Date	February 27, 2009
Deliverable	A modification to TFC-PLN-40, *Hoisting and Rigging Safety Management Program Plan*, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance.

CC-CA-02
Perform a documented review of all current contracts for subcontractors performing field work (beyond walk down and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, *Subcontractor Oversight.*

CC-CA-02	
Actionee	Bill Gaydosh
Due Date	March 1, 2009
Deliverable	Internal Memo to Manager, Safety Programs, citing reviews performed and results of review.

CC-CA-03
Revise TFC-BSM-TQ-STD-18, *Hoisting and Rigging Training Program Description,* to ensure subcontractor crane operator training is commensurate with FH crane operator training requirements developed as a result of the training assessment.

CC-CA-03	
Actionee	Tim Kramer
Due Date	March 27, 2009
Deliverable	Modified procedure.

CC-CA-04
Formally communicate to all subcontractors with existing contracts for performing crane operations in tank farms of the changes to TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging*, generated as a result of corrective actions in this report.

CC-CA-08	
Actionee	Karen Lesko
Due Date	February 19, 2009
Deliverable	Copies of communications to subcontractors.

CC-CA-05
Modify TFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-05	
Actionee	Liz Tackett
Due Date	March 15, 2009
Deliverable	Modification toTFC-OPS-OPER-C-14, *Event Investigation Process,* section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.

CC-CA-06
Revise TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria.

CC-CA-06	
Actionee	Tammy Reynolds
Due Date	March 15, 2009
Deliverable	Revisions to TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition*, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria. NOTE: This revision need not be issued until April 15, 2009 to accommodate the training and briefings contained in CC-CA-07 and CC-CA-08

CC-CA-07
Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

CC-CA-07	
Actionee	Lloyd Keith
Due Date	March 15, 2009
Deliverable	Changes to the training that reflects changes to TF-AOP-20 as contained in CC-CA-06

CC-CA-08
Provide and document briefings for FWS, SSW, and Shift manager qualified staff on changes made to TF-AOP-020, *Response for Placing Personnel and Equipment in a Safe Condition.*

CC-CA-08	
Actionee	Tammy Reynolds
Due Date	April 15, 2009
Deliverable	Rosters showing completion of briefings for affected workers.

CC-CA-09
Modify TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER.

CC-CA-09	
Actionee	Tino Maciuca
Due Date	March 15, 2009
Deliverable	A modification to TFC-ESHQ-Q_C-C-01, *Problem Evaluation Request*, section 4.3, Screen PERs to include identifying a SMP owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs*. For PERs with resolution and significant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER

CC-CA-10
SMP SME for hoisting and rigging review FH management assessment of Fleet Maintenance for potential impacts to TOC and document review to the Manager, Safety and Health.

CC-CA-10	
Actionee	Tim Kramer
Due Date	March 15, 2009
Deliverable	Internal memorandum documenting the review of the FH management assessment of FH Fleet Maintenance. NOTE Dependent on FH completion of action.

EPA-01
Perform an end point assessment of the corrective actions identified in this report that address the completion and effectiveness of corrective actions identified for both FH and WRPS.

EPA-01	
Actionee	Tino Maciuca
Due Date	October 15, 2009
Deliverable	An independent assessment of the corrective actions identified in this report that address the completion and effectiveness of corrective actions identified for both FH and WRPS

In order to ensure the documentation of those actions completed by WRPS during the course of the assessment are documented, the following actions are included in this report. Temporary actions, such as red arrow entries, are not included.

1. Provide objective evidence that Lessons Learned IB-08-048, *Clarification of Expectation for Crane Functional Check* was issued.

Actionee	Bob Brown
Due Date	January 27, 2008
Deliverable	A copy of Lessons Learned IB-08-048, *Clarification of Expectation for Crane Functional Check*

2. Provide objective evidence that TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging* has been modified to reflect functional check criteria contained in lessons learned IB-08-048.

Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging*, modified to reflect functional check criteria contained in lessons learned IB-08-048.

3. Provide objective evidence that TFC-ENG-FACSUP-C-25 has been modified to require critical lift designations for lifts at or above 90% of a crane load chart rating.

Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of TFC-ENG-FACSUP-C-25 modified to require critical lift designations for lifts at or above 90% of a crane load chart rating.

4. Provide objective evidence of the review of WRPS construction crane operator qualifications to assure compliance with provisions of DOE-RL-92-036, *Hanford Site Hoisting and Rigging Manual.*

Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of the completed review of crane operator qualifications.

5. Provide objective evidence that subcontractor crane operators have been briefed on Load Moment Indicator (LMI) error codes and expected responses.

Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of briefing materials and rosters of personnel.

6. Provide objective evidence that TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging,* was modified to require that any reconfiguration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen by a designated representative of the equipment custodial company/organization.

Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of TFC-ENG-FACSUP-C-25, *CH2M HILL Hoisting and Rigging,* modified to require that any reconfiguration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen by a designated representative of the equipment custodial company/organization.

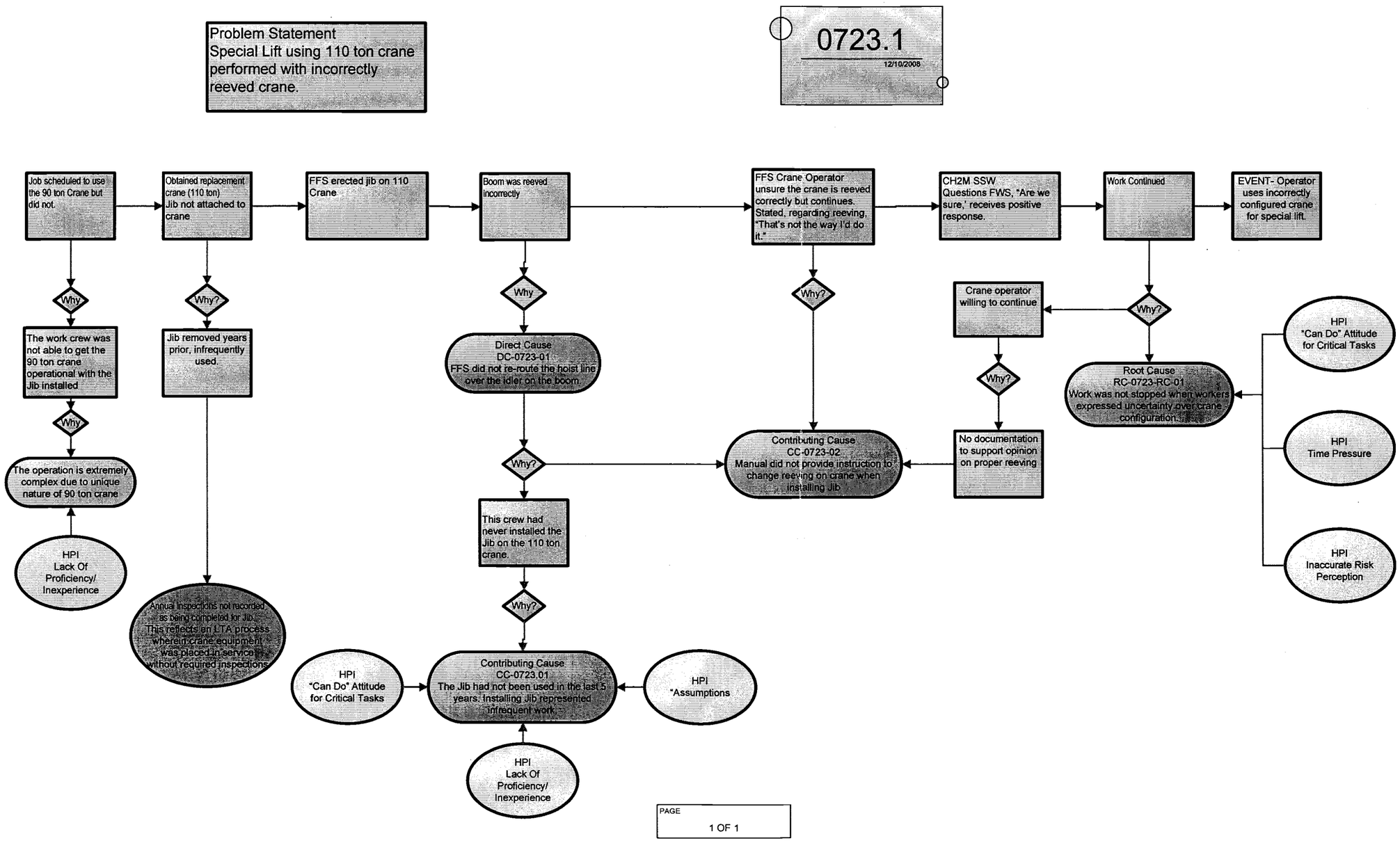
7. Provide objective evidence that a change to TFC-OPS-OPER-C-10, *Vehicle and Dome Load Control in Tank Farm Facilities,* to define minimum criteria for crane configuration and movement while in tank farm facilities, specifically addressing minimum number of spotters, tie-down length, and crane configuration, was initiated.

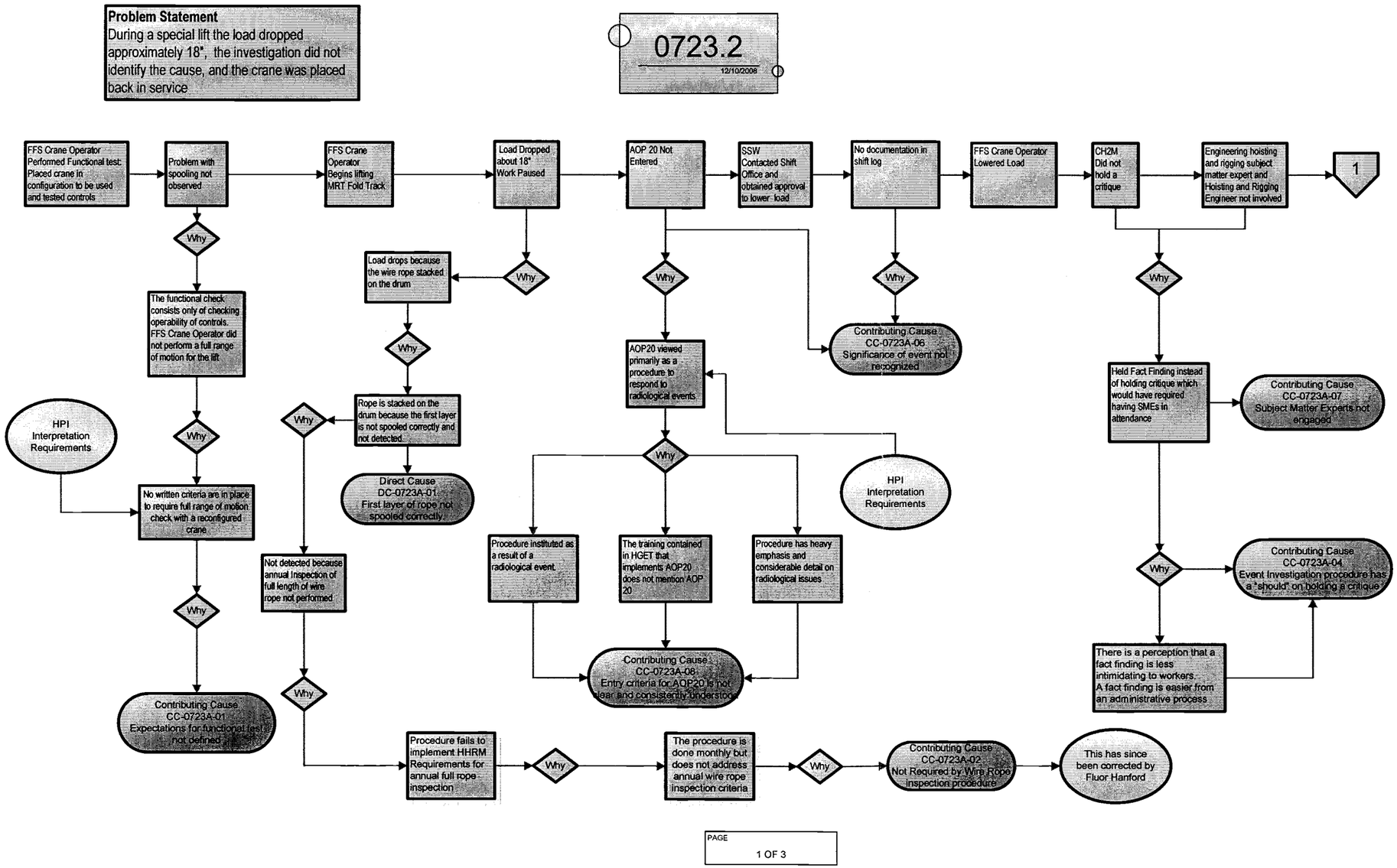
Actionee	Tim Kramer
Due Date	January 27, 2008
Deliverable	A copy of the ADCA to modify TFC-OPS-OPER-C-10, *Vehicle and Dome Load Control in Tank Farm Facilities,* to define minimum criteria for crane configuration and movement while in tank farm facilities, specifically addressing minimum number of spotters, tie-down length, and crane configuration

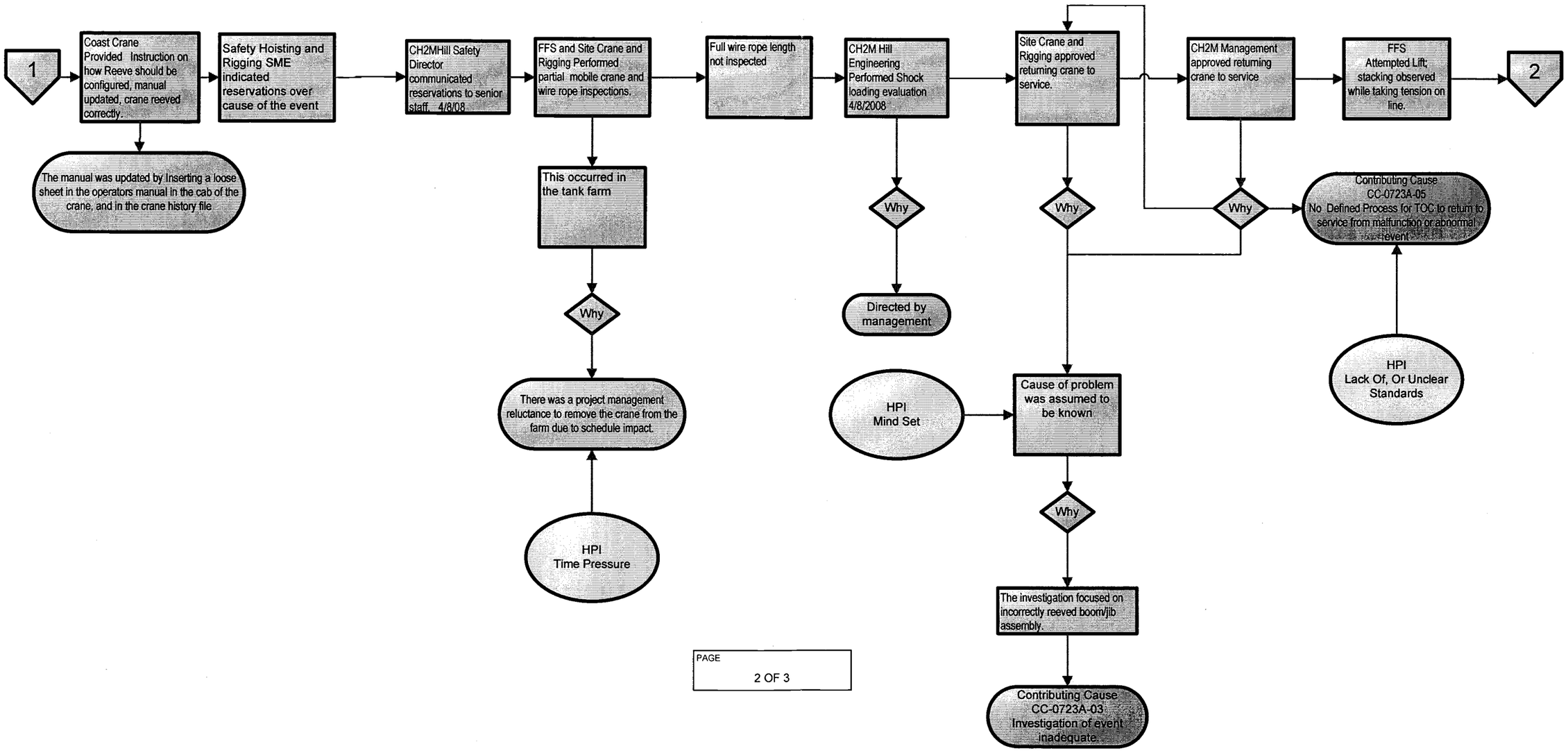
8. Provide objective evidence of an authorization basis review of the potential impact on TOC SMPs relative to the slip stick phenomenon.

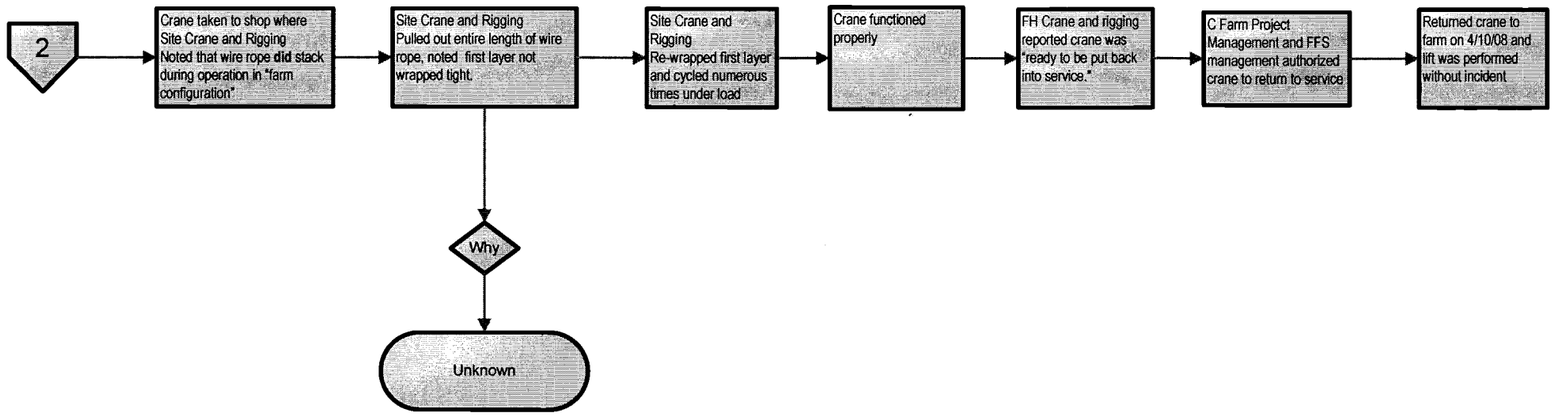
Actionee	Bob Brown
Due Date	January 27, 2008
Deliverable	Documentation of determination by NS&L.

Attachment G: Why Analysis Flow Charts

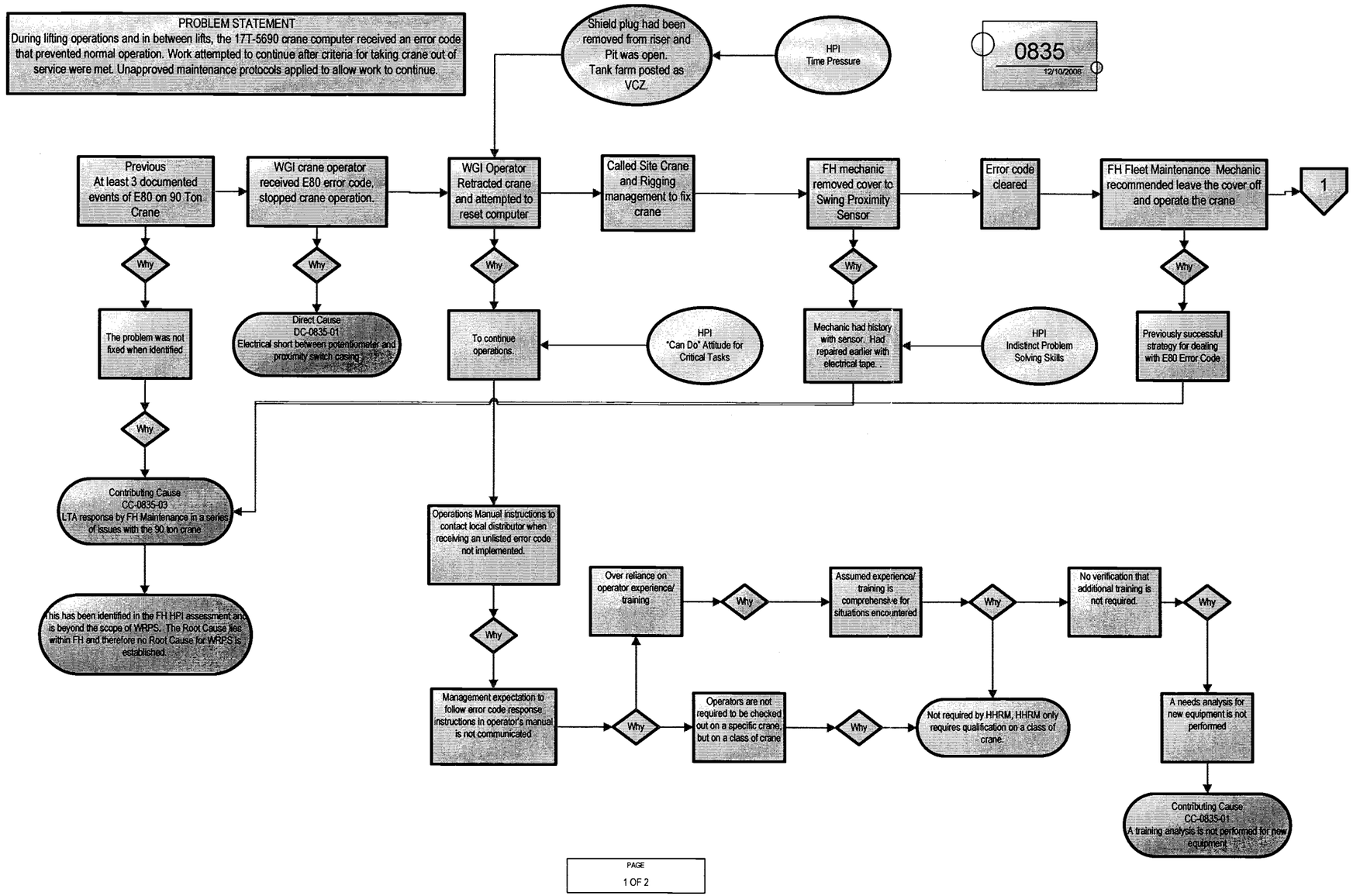

Problem Statement
Special Lift using 110 ton crane performed with incorrectly reeved crane.
0723.1
12/10/2008
Job scheduled to use the 90 ton Crane but did not.
Obtained replacement crane (110 ton) Jib not attached to crane
FFS erected jib on 110 Crane
Boom was reeved incorrectly
FFS Crane Operator unsure the crane is reeved correctly but continues. Stated, regarding reeving, "That's not the way I'd do it."
CH2M SSW Questions FWS, "Are we sure,' receives positive response.
Work Continued
EVENT- Operator uses incorrectly configured crane for special lift.
Why
The work crew was not able to get the 90 ton crane operational with the Jib installed
Why
The operation is extremely complex due to unique nature of 90 ton crane
HPI Lack Of Proficiency/ Inexperience
Why?
Jib removed years prior, infrequently used.
Annual inspections not recorded as being completed for Jib. This reflects an LTA process wherein crane equipment was placed in service without required inspections
Why
Direct Cause DC-0723-01 FFS did not re-route the hoist line over the idler on the boom
Why?
This crew had never installed the Jib on the 110 ton crane.
Why?
HPI "Can Do" Attitude for Critical Tasks
Contributing Cause CC-0723.01 The Jib had not been used in the last 5 years. Installing Jib represented infrequent work.
HPI "Assumptions
HPI Lack Of Proficiency/ Inexperience
Why?
Contributing Cause CC-0723-02 Manual did not provide instruction to change reeving on crane when installing Jib
Why?
Crane operator willing to continue
Why?
No documentation to support opinion on proper reeving
Why?
Root Cause RC-0723-RC-01 Work was not stopped when workers expressed uncertainty over crane configuration.
HPI "Can Do" Attitude for Critical Tasks
HPI Time Pressure
HPI Inaccurate Risk Perception
PAGE
1 OF 1


Problem Statement
During a special lift the load dropped approximately 18", the investigation did not identify the cause, and the crane was placed back in service
0723.2
12/10/2008
FFS Crane Operator Performed Functional test. Placed crane in configuration to be used and tested controls
Problem with spooling not observed
FFS Crane Operator Begins lifting MRT Fold Track
Load Dropped about 18" Work Paused
AOP 20 Not Entered
SSW Contacted Shift Office and obtained approval to lower load
No documentation in shift log
FFS Crane Operator Lowered Load
CH2M Did not hold a critique
Engineering hoisting and rigging subject matter expert and Hoisting and Rigging Engineer not involved
1
Why
The functional check consists only of checking operability of controls. FFS Crane Operator did not perform a full range of motion for the lift
HPI Interpretation Requirements
No written criteria are in place to require full range of motion check with a reconfigured crane
Contributing Cause CC-0723A-01 Expectations for functional test not defined
Load drops because the wire rope stacked on the drum
Rope is stacked on the drum because the first layer is not spooled correctly and not detected.
Direct Cause DC-0723A-01 First layer of rope not spooled correctly
Not detected because annual Inspection of full length of wire rope not performed
Procedure fails to implement HHRM Requirements for annual full rope inspection
The procedure is done monthly but does not address annual wire rope inspection criteria
Contributing Cause CC-0723A-02 Not Required by Wire Rope inspection procedure
This has since been corrected by Fluor Hanford
AOP20 viewed primarily as a procedure to respond to radiological events
Procedure instituted as a result of a radiological event.
The training contained in HGET that implements AOP20 does not mention AOP 20
Procedure has heavy emphasis and considerable detail on radiological issues
Contributing Cause CC-0723A-08 Entry criteria for AOP20 is not clear and consistently understood
Contributing Cause CC-0723A-06 Significance of event not recognized
Held Fact Finding instead of holding critique which would have required having SMEs in attendance
Contributing Cause CC-0723A-07 Subject Matter Experts not engaged
Contributing Cause CC-0723A-04 Event Investigation procedure has a "should" on holding a critique
There is a perception that a fact finding is less intimidating to workers. A fact finding is easier from an administrative process
PAGE
1 OF 3


1
Coast Crane Provided Instruction on how Reeve should be configured, manual updated, crane reeved correctly.
Safety Hoisting and Rigging SME indicated reservations over cause of the event
CH2MHill Safety Director communicated reservations to senior staff. 4/8/08
FFS and Site Crane and Rigging Performed partial mobile crane and wire rope inspections.
Full wire rope length not inspected
CH2M Hill Engineering Performed Shock loading evaluation 4/8/2008
Site Crane and Rigging approved returning crane to service.
CH2M Management approved returning crane to service
FFS Attempted Lift; stacking observed while taking tension on line.
2
The manual was updated by Inserting a loose sheet in the operators manual in the cab of the crane, and in the crane history file
This occurred in the tank farm
Why
There was a project management reluctance to remove the crane from the farm due to schedule impact.
HPI Time Pressure
Why
Directed by management
HPI Mind Set
Cause of problem was assumed to be known
Why
The investigation focused on incorrectly reeved boom/jib assembly.
Contributing Cause CC-0723A-03 Investigation of event inadequate.
Why
Why
Contributing Cause CC-0723A-05 No Defined Process for TOC to return to service from malfunction or abnormal event
HPI Lack Of, Or Unclear Standards
PAGE
2 OF 3


2
Crane taken to shop where Site Crane and Rigging Noted that wire rope did stack during operation in "farm configuration"
Site Crane and Rigging Pulled out entire length of wire rope, noted first layer not wrapped tight.
Site Crane and Rigging Re-wrapped first layer and cycled numerous times under load
Crane functioned properly
FH Crane and rigging reported crane was "ready to be put back into service."
C Farm Project Management and FFS management authorized crane to return to service
Returned crane to farm on 4/10/08 and lift was performed without incident
Why
Unknown

PAGE
3 OF 3


PROBLEM STATEMENT
During lifting operations and in between lifts, the 17T-5690 crane computer received an error code that prevented normal operation. Work attempted to continue after criteria for taking crane out of service were met. Unapproved maintenance protocols applied to allow work to continue.
Shield plug had been removed from riser and Pit was open. Tank farm posted as VCZ.
HPI Time Pressure
0835
12/10/2008
Previous At least 3 documented events of E80 on 90 Ton Crane
WGI crane operator received E80 error code, stopped crane operation.
WGI Operator Retracted crane and attempted to reset computer
Called Site Crane and Rigging management to fix crane
FH mechanic removed cover to Swing Proximity Sensor
Error code cleared
FH Fleet Maintenance Mechanic recommended leave the cover off and operate the crane
1
Why
The problem was not fixed when identified
Direct Cause DC-0835-01 Electrical short between potentiometer and proximity switch casing
To continue operations.
HPI "Can Do" Attitude for Critical Tasks
Mechanic had history with sensor. Had repaired earlier with electrical tape.
HPI Indistinct Problem Solving Skills
Previously successful strategy for dealing with E80 Error Code
Contributing Cause CC-0835-03 LTA response by FH Maintenance in a series of issues with the 90 ton crane
This has been identified in the FH HPI assessment and is beyond the scope of WRPS. The Root Cause lies within FH and therefore no Root Cause for WRPS is established.
Operations Manual instructions to contact local distributor when receiving an unlisted error code not implemented.
Over reliance on operator experience/ training
Assumed experience/ training is comprehensive for situations encountered
No verification that additional training is not required.
Management expectation to follow error code response instructions in operator's manual is not communicated
Operators are not required to be checked out on a specific crane, but on a class of crane
Not required by HHRM, HHRM only requires qualification on a class of crane.
A needs analysis for new equipment is not performed
Contributing Cause CC-0835-01 A training analysis is not performed for new equipment
PAGE
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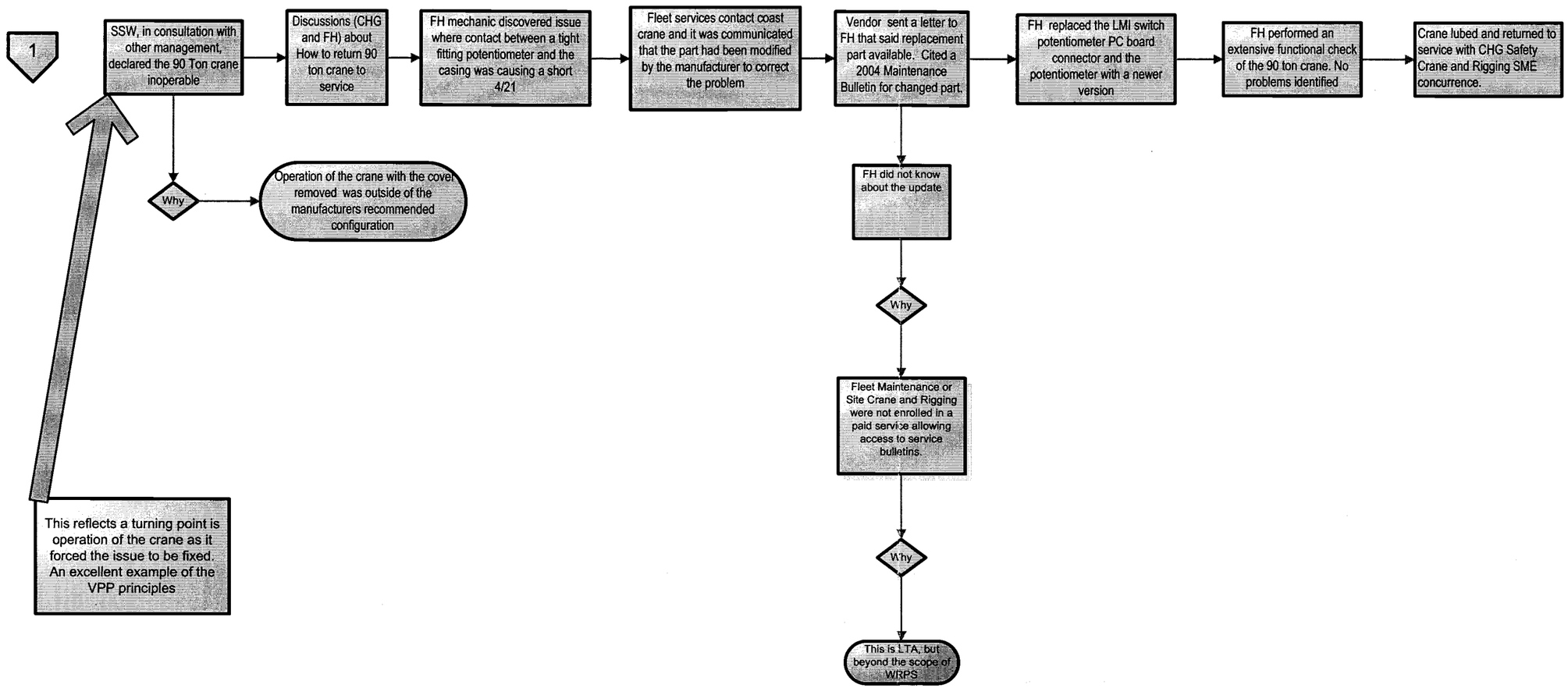
1
SSW, in consultation with other management, declared the 90 Ton crane inoperable
Discussions (CHG and FH) about How to return 90 ton crane to service
FH mechanic discovered issue where contact between a tight fitting potentiometer and the casing was causing a short 4/21
Fleet services contact coast crane and it was communicated that the part had been modified by the manufacturer to correct the problem
Vendor sent a letter to FH that said replacement part available. Cited a 2004 Maintenance Bulletin for changed part.
FH replaced the LMI switch potentiometer PC board connector and the potentiometer with a newer version
FH performed an extensive functional check of the 90 ton crane. No problems identified
Crane lubed and returned to service with CHG Safety Crane and Rigging SME concurrence.
Why
Operation of the crane with the cover removed was outside of the manufacturers recommended configuration
FH did not know about the update
Why
Fleet Maintenance or Site Crane and Rigging were not enrolled in a paid service allowing access to service bulletins.
Why
This is LTA, but beyond the scope of WRPS
This reflects a turning point is operation of the crane as it forced the issue to be fixed. An excellent example of the VPP principles

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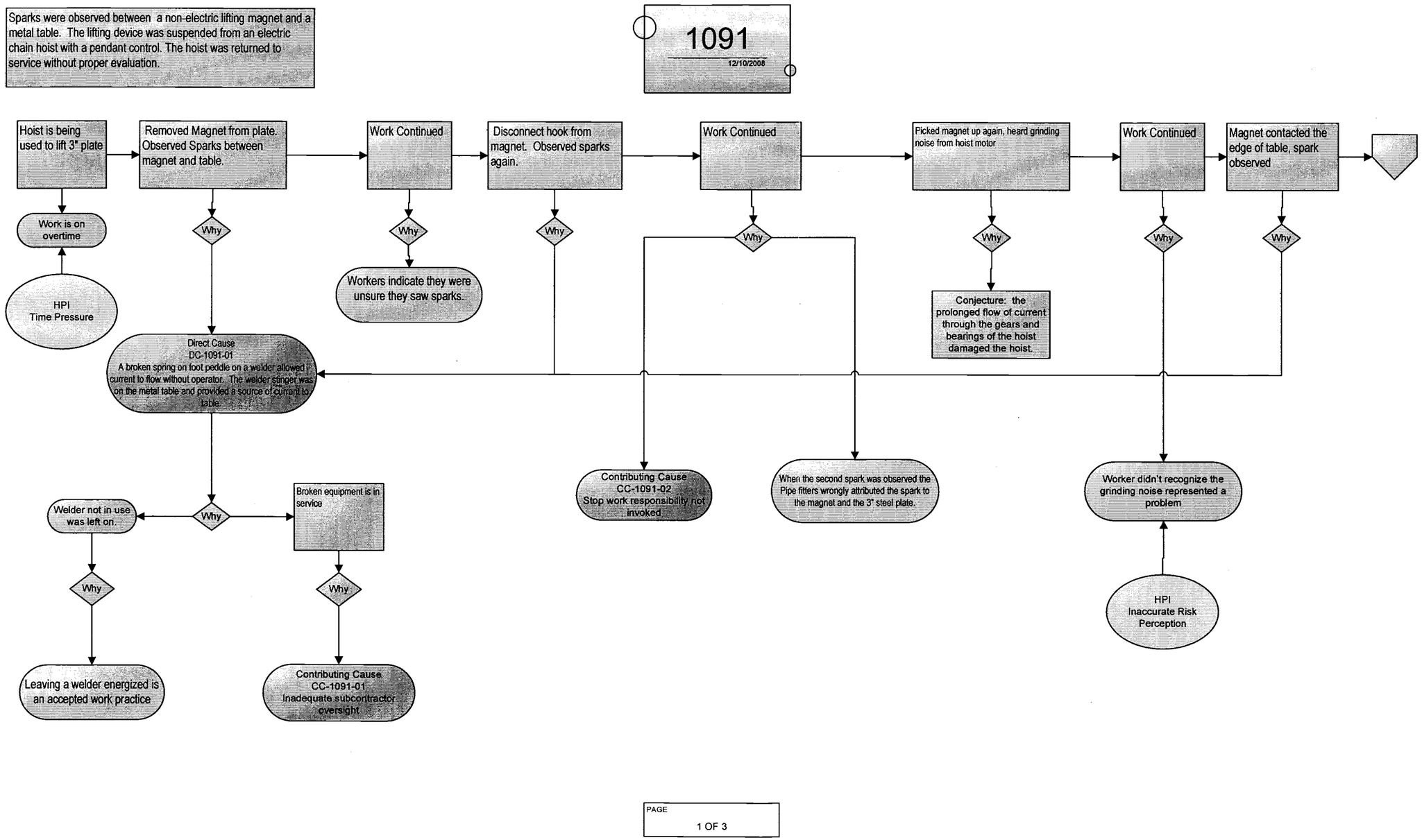
Sparks were observed between a non-electric lifting magnet and a metal table. The lifting device was suspended from an electric chain hoist with a pendant control. The hoist was returned to service without proper evaluation.
1091
12/10/2008
Hoist is being used to lift 3" plate
Removed Magnet from plate. Observed Sparks between magnet and table.
Work Continued
Disconnect hook from magnet. Observed sparks again.
Work Continued
Picked magnet up again, heard grinding noise from hoist motor
Work Continued
Magnet contacted the edge of table, spark observed
Work is on overtime
HPI
Time Pressure
Why
Workers indicate they were unsure they saw sparks.
Conjecture: the prolonged flow of current through the gears and bearings of the hoist damaged the hoist.
Direct Cause
DC-1091-01
A broken spring on foot peddle on a welder allowed current to flow without operator. The welder stinger was on the metal table and provided a source of current to table.
Contributing Cause
CC-1091-02
Stop work responsibility not invoked
When the second spark was observed the Pipe fitters wrongly attributed the spark to the magnet and the 3" steel plate.
Worker didn't recognize the grinding noise represented a problem
HPI
Inaccurate Risk Perception
Welder not in use was left on.
Broken equipment is in service
Leaving a welder energized is an accepted work practice
Contributing Cause
CC-1091-01
Inadequate subcontractor oversight
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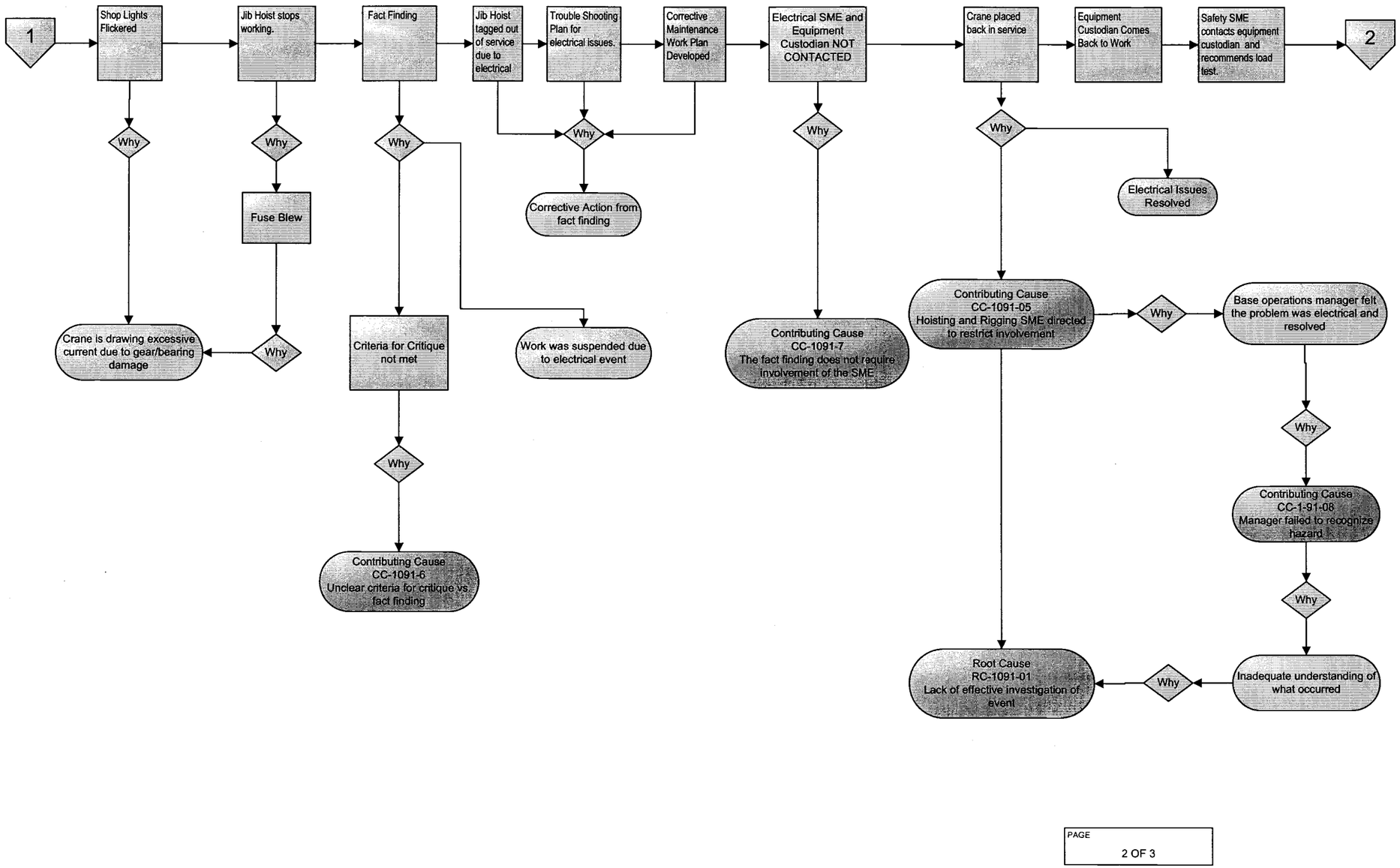
1
Shop Lights Flickered
Jib Hoist stops working.
Fact Finding
Jib Hoist tagged out of service due to electrical
Trouble Shooting Plan for electrical issues.
Corrective Maintenance Work Plan Developed
Electrical SME and Equipment Custodian NOT CONTACTED
Crane placed back in service
Equipment Custodian Comes Back to Work
Safety SME contacts equipment custodian and recommends load test.
2
Why
Fuse Blew
Corrective Action from fact finding
Electrical Issues Resolved
Crane is drawing excessive current due to gear/bearing damage
Criteria for Critique not met
Work was suspended due to electrical event
Contributing Cause CC-1091-7 The fact finding does not require involvement of the SME
Contributing Cause CC-1091-05 Hoisting and Rigging SME directed to restrict involvement
Base operations manager felt the problem was electrical and resolved
Contributing Cause CC-1-91-08 Manager failed to recognize hazard
Contributing Cause CC-1091-6 Unclear criteria for critique vs. fact finding
Root Cause RC-1091-01 Lack of effective investigation of event
Inadequate understanding of what occurred

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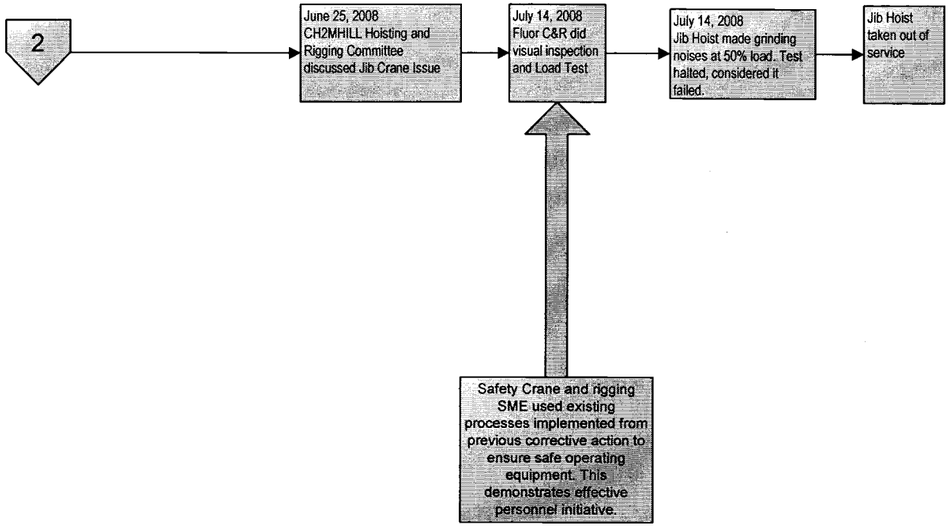
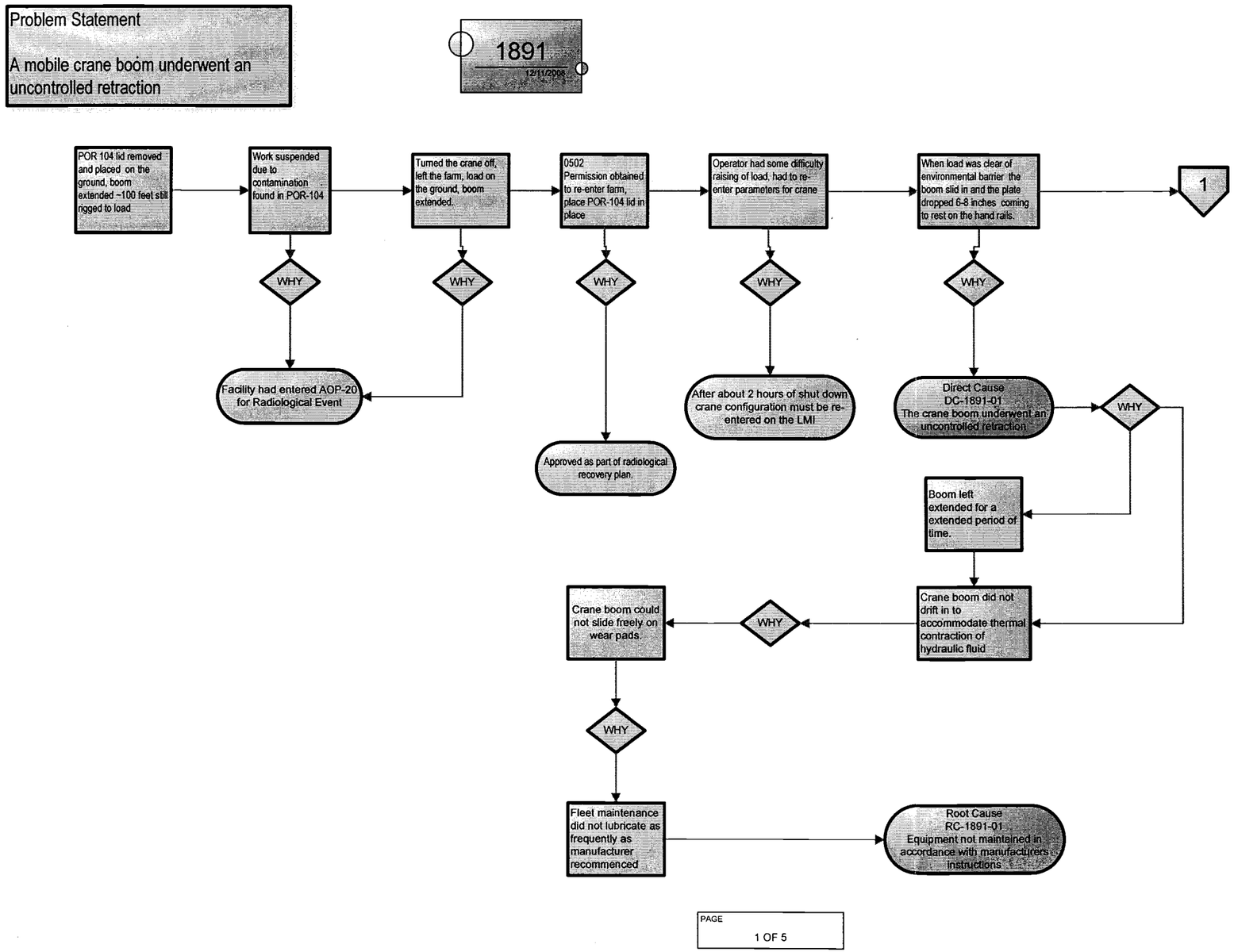

2
June 25, 2008
CH2MHILL Hoisting and Rigging Committee discussed Jib Crane Issue
July 14, 2008
Fluor C&R did visual inspection and Load Test
July 14, 2008
Jib Hoist made grinding noises at 50% load. Test halted, considered it failed.
Jib Hoist taken out of service
Safety Crane and rigging SME used existing processes implemented from previous corrective action to ensure safe operating equipment. This demonstrates effective personnel initiative.


Problem Statement
A mobile crane boom underwent an uncontrolled retraction
1891
12/11/2008
POR 104 lid removed and placed on the ground, boom extended ~100 feet still rigged to load
Work suspended due to contamination found in POR-104
Turned the crane off, left the farm, load on the ground, boom extended.
0502 Permission obtained to re-enter farm, place POR-104 lid in place
Operator had some difficulty raising of load, had to re-enter parameters for crane
When load was clear of environmental barrier the boom slid in and the plate dropped 6-8 inches coming to rest on the hand rails.
1
WHY
Facility had entered AOP-20 for Radiological Event
After about 2 hours of shut down crane configuration must be re-entered on the LMI
Approved as part of radiological recovery plan.
Direct Cause DC-1891-01 The crane boom underwent an uncontrolled retraction
Boom left extended for a extended period of time.
Crane boom did not drift in to accommodate thermal contraction of hydraulic fluid
Crane boom could not slide freely on wear pads.
Fleet maintenance did not lubricate as frequently as manufacturer recommenced
Root Cause RC-1891-01 Equipment not maintained in accordance with manufacturers instructions
PAGE
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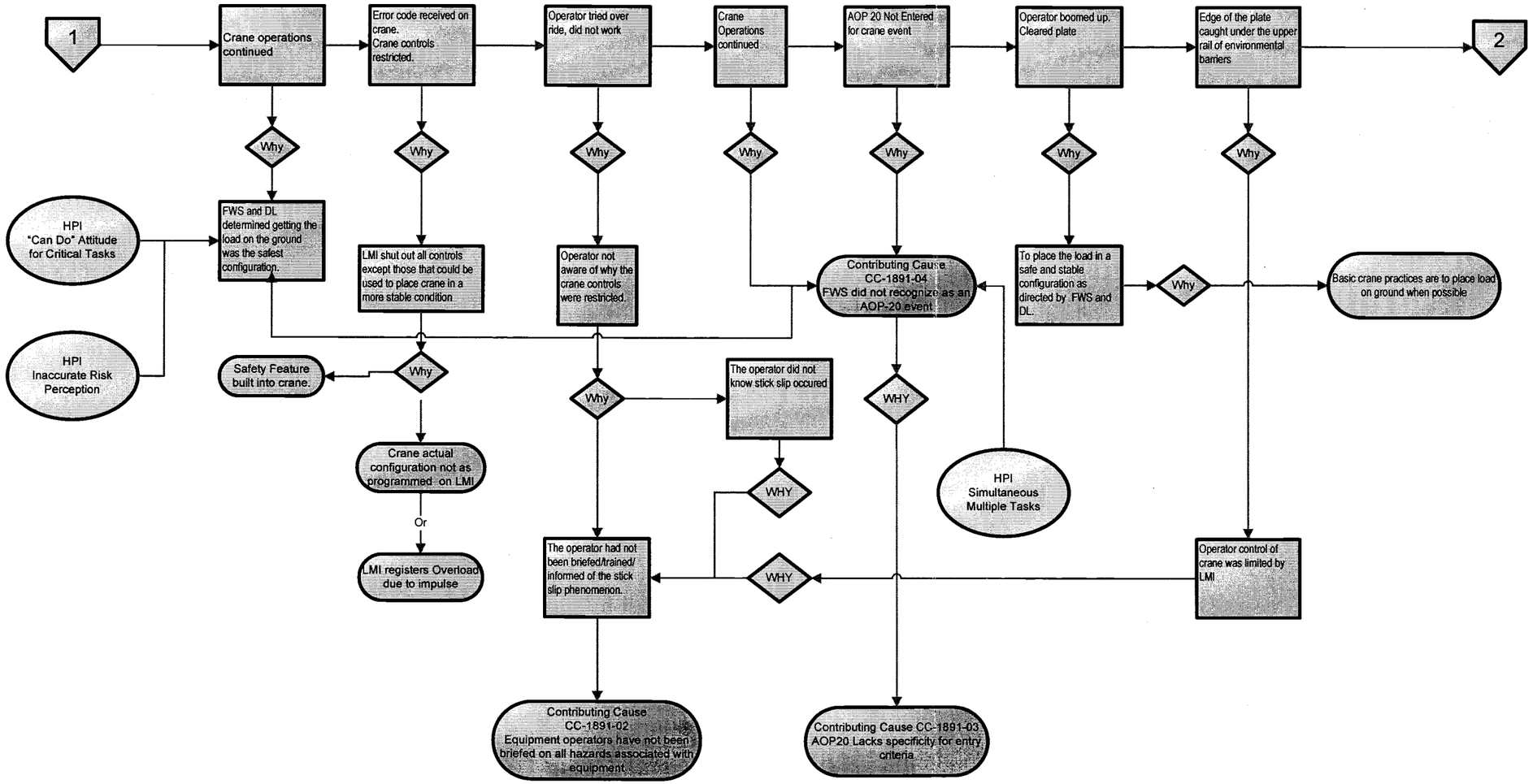
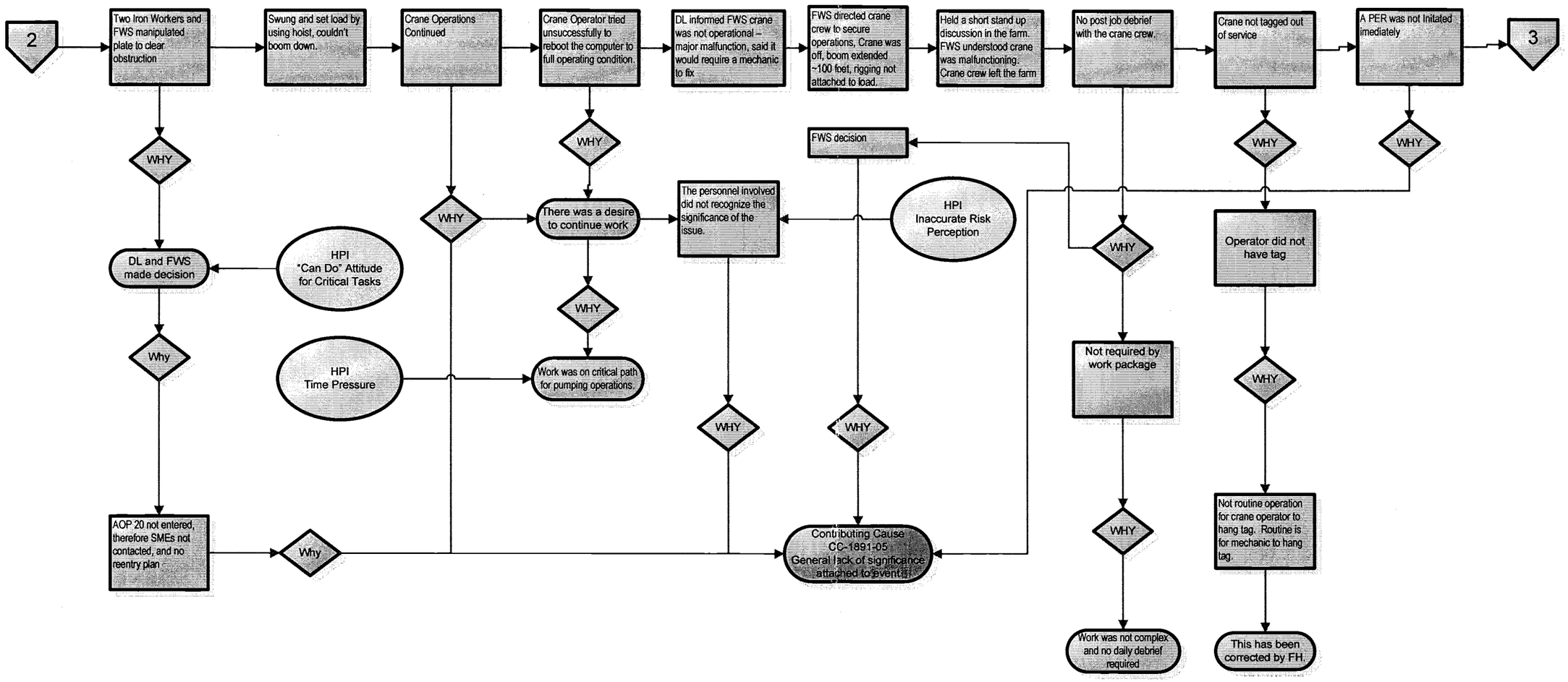

1
Crane operations continued
Error code received on crane. Crane controls restricted.
Operator tried over ride, did not work
Crane Operations continued
AOP 20 Not Entered for crane event
Operator boomed up. Cleared plate
Edge of the plate caught under the upper rail of environmental barriers
2
Why
HPI "Can Do" Attitude for Critical Tasks
FWS and DL determined getting the load on the ground was the safest configuration.
LMI shut out all controls except those that could be used to place crane in a more stable condition
Operator not aware of why the crane controls were restricted.
Contributing Cause CC-1891-04 FWS did not recognize as an AOP-20 event
To place the load in a safe and stable configuration as directed by FWS and DL.
Basic crane practices are to place load on ground when possible
HPI Inaccurate Risk Perception
Safety Feature built into crane.
The operator did not know stick slip occured
WHY
HPI Simultaneous Multiple Tasks
Crane actual configuration not as programmed on LMI
Or
LMI registers Overload due to impulse
The operator had not been briefed/trained/ informed of the stick slip phenomenon.
Operator control of crane was limited by LMI
Contributing Cause CC-1891-02 Equipment operators have not been briefed on all hazards associated with equipment
Contributing Cause CC-1891-03 AOP20 Lacks specificity for entry criteria

PAGE 2 OF 5


2
Two Iron Workers and FWS manipulated plate to clear obstruction
Swung and set load by using hoist, couldn't boom down.
Crane Operations Continued
Crane Operator tried unsuccessfully to reboot the computer to full operating condition.
DL informed FWS crane was not operational – major malfunction, said it would require a mechanic to fix
FWS directed crane crew to secure operations, Crane was off, boom extended ~100 feet, rigging not attached to load.
Held a short stand up discussion in the farm. FWS understood crane was malfunctioning. Crane crew left the farm
No post job debrief with the crane crew.
Crane not tagged out of service
A PER was not Initated imediately
3
WHY
WHY
WHY
WHY
WHY
WHY
WHY
WHY
WHY
FWS decision
DL and FWS made decision
HPI "Can Do" Attitude for Critical Tasks
There was a desire to continue work
The personnel involved did not recognize the significance of the issue.
HPI Inaccurate Risk Perception
Operator did not have tag
Why
HPI Time Pressure
Work was on critical path for pumping operations.
Not required by work package
Not routine operation for crane operator to hang tag. Routine is for mechanic to hang tag.
AOP 20 not entered, therefore SMEs not contacted, and no reentry plan
Why
Contributing Cause CC-1891-05 General lack of significance attached to event
Work was not complex and no daily debrief required
This has been corrected by FH.

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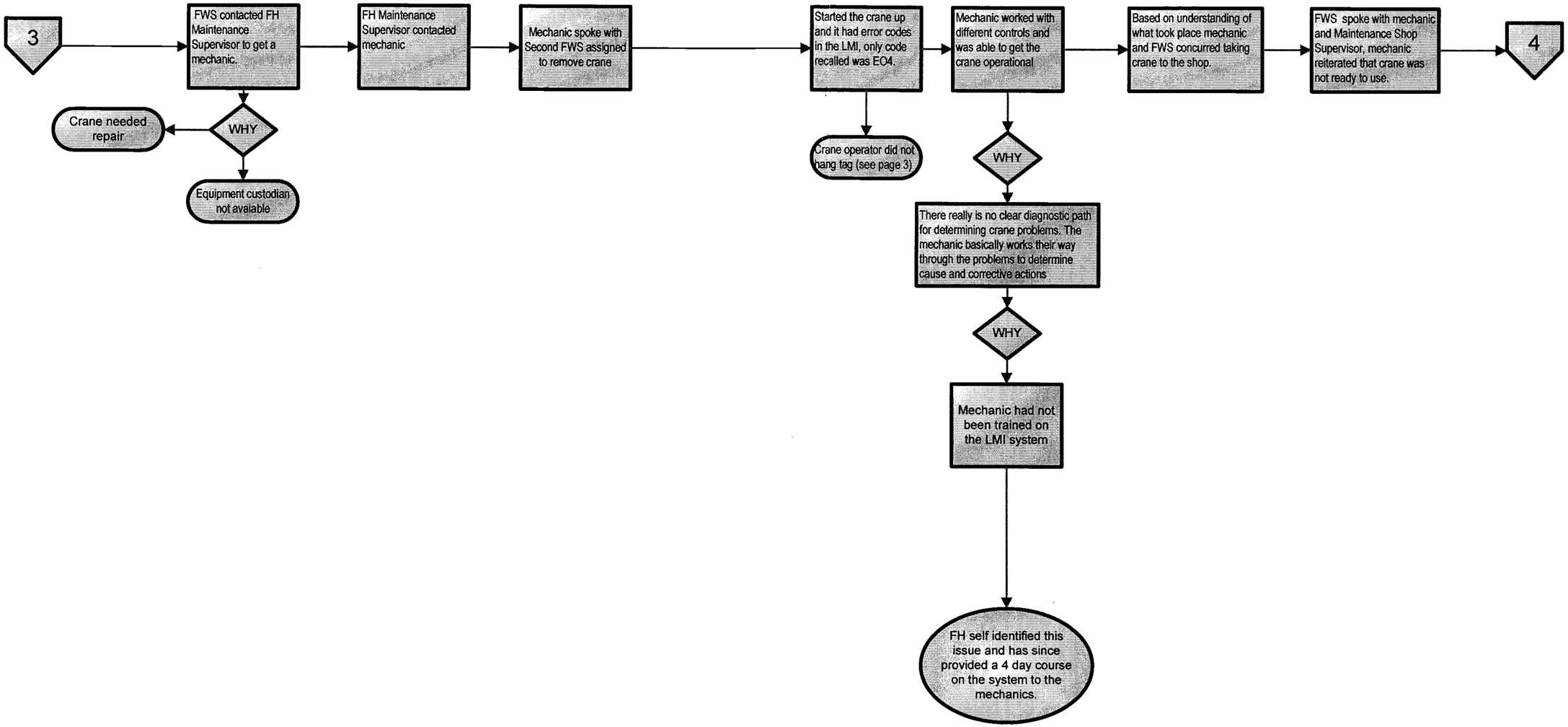
3
FWS contacted FH Maintenance Supervisor to get a mechanic.
FH Maintenance Supervisor contacted mechanic
Mechanic spoke with Second FWS assigned to remove crane
Started the crane up and it had error codes in the LMI, only code recalled was EO4.
Mechanic worked with different controls and was able to get the crane operational
Based on understanding of what took place mechanic and FWS concurred taking crane to the shop.
FWS spoke with mechanic and Maintenance Shop Supervisor, mechanic reiterated that crane was not ready to use.
4
Crane needed repair
WHY
Equipment custodian not avaiable
Crane operator did not hang tag (see page 3)
WHY
There really is no clear diagnostic path for determining crane problems. The mechanic basically works their way through the problems to determine cause and corrective actions
WHY
Mechanic had not been trained on the LMI system
FH self identified this issue and has since provided a 4 day course on the system to the mechanics.

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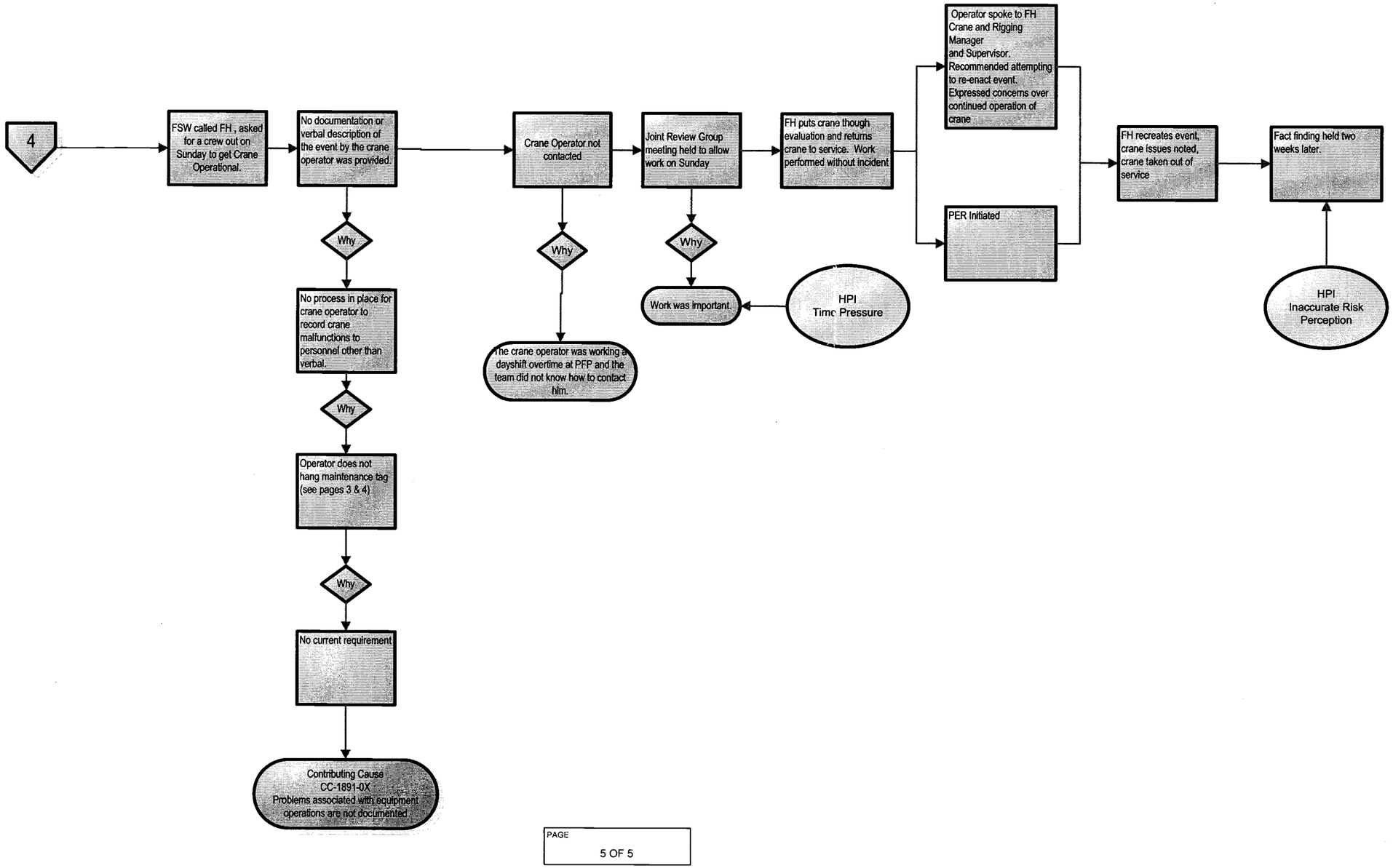
4
FSW called FH , asked for a crew out on Sunday to get Crane Operational.
No documentation or verbal description of the event by the crane operator was provided.
Why
No process in place for crane operator to record crane malfunctions to personnel other than verbal.
Why
Operator does not hang maintenance tag (see pages 3 & 4)
Why
No current requirement
Contributing Cause
CC-1891-0X
Problems associated with equipment operations are not documented
Crane Operator not contacted
Why
The crane operator was working a dayshift overtime at PFP and the team did not know how to contact him.
Joint Review Group meeting held to allow work on Sunday
Why
Work was important.
HPI
Time Pressure
FH puts crane though evaluation and returns crane to service. Work performed without incident
Operator spoke to FH Crane and Rigging Manager and Supervisor. Recommended attempting to re-enact event. Expressed concerns over continued operation of crane
PER Initiated
FH recreates event, crane issues noted, crane taken out of service
Fact finding held two weeks later.
HPI
Inaccurate Risk Perception
PAGE
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Task# WRPS-PER-2008-0189.2

E-STARS[R] Report
Task Detail Report
07/08/2009 1326

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.2		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-01: Modify TFC-PLN-40, Hoisting and Rigging Safety Management Program Plan, and appropriate flow down procedures to ad		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 03/02/2009
Reference	WRPS-PER-2008-0189	**Due**	03/05/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-01: Modify TFC-PLN-40, Hoisting and Rigging Safety Management Program Plan, and appropriate flow down procedures to address responsibility within WRPS to review the FH analysis resulting from a crane taken out of service due to a TOC event or identified problem requiring maintenance. Deliverable: A modification to TFC-PLN-40, Hoisting and Rigging Safety Management Program Plan, and appropriate flow down procedures to address responsibility within WRPS to review FH analysis resulting from the crane taken out of service due to a TOC event or identified problem requiring maintenance. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 02/26/2009 0738 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 02/27/2009 1227 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. ADCA-CC-CA-01.xdf 5. Causal Team Charter WRPS-0800028-0810100014[1].pdf 6. Link to PER 7. PER 2008-0189 CCA Final.doc 8. PLN-40-REV-C-2change notice.doc 9. TFC-PLN-40,_REV C-2.doc

COMMENTS

Poster	Kramer, Tim F - 02/24/2009 0723
Editor	Kramer, Tim F - 02/24/2009 0723

Task# WRPS-PER-2008-0189.2

	The change completed review cycle and was submitted to procedures group on 2/23/09. A required reading list has been generated and is ready for distribution upon procedure revision release expected 2/25/09.		
Poster	Kramer, Tim F - 02/26/2009 0737		
	Revision C-2 to TFC-PLN-40 was officially issued on 02/25/09. This revision made changes to Section 2.6 as required by CC-CA-01 of WRPS-PER-2009-0189. This action is now complete.		
Poster	Gaydosh, William L - 02/27/2009 1227		
	Concur		
	The actions taken complete this item.		
Poster	^PER CAs (Steelman, Tracy L) - 03/02/2009 1132		
	CLOSED		
	PAAA Coordinator reviewed and concurred with closure. tls 3/2/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/05/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION

(See page 3 for form completion instructions)

1. Document Number	2. Document Title
TFC-PLN-40 Current Revision - To - Next Revision	HOISTING AND RIGGING SAFETY MANAGEMENT PROGRAM PLAN

3. Document Type: ◯ Procedure ◯ Standard ◯ Guidance Doc. ◯ Mgmt. Directive ◯ Policy ◉ Plan ◯ Charter

4. Type of Change: ◯ New ◉ Major Revision ◯ Minor Revision ◯ Periodic Review ◯ Cancellation

5. Initiated by	6. Phone	7. Mailstop	8. Date
TIM KRAMER	373-4028	S7-70	02/23/09

9. Document Owner	10. Functional Area Manager
TIM KRAMER	BILL GAYDOSH

11. Proposed Changes	12. Reason for Change
Revise Section 2.6 (Responsibilities of all WRPS organizations and subcontractors)to include the following: Ensure compliance with all DOE-RL-92-36 and all WRPS H&R procedures Notify Safety Programs H&R SME as soon as possible following any abnormal H&R event, and prior to any critique, fact finding, or incident investigation whenever possible. Review determination from the crane and rigging service / maintenance provider to return equipment (e.g., crane, hoist, etc.) to service following an abnormal event or equipment malfunction. This review should include contacting the safety program H&R SME and/or Lead Rigging Engineer to assist in resolving questions or concerns prior to allowing affected equipment to continue operation in TOC facilities. Communicate facts surrounding any abnormal H&R event or equipment malfunction (including return to service determination) to affected employees prior to allowing work to resume. Notify shift office of a crane or hoist returning to service in TOC facilities following any abnormal H&R event involving the crane or hoist.	The need for this revision was identified during the crane causal analysis and documented in SIG PER WRPS-PER-2008-0189. ESTARS item WRPS-PER-2008-0189.2

IMPACTED DOCUMENTS

13. Does the change impact TFC-PLN-100?	◯ Yes	◯ No	If Yes, add impacted document to block 15 and initiate ADCA.
14. Does the change impact RPP-MP-003?	◯ Yes	◯ No	If Yes, add impacted document to block 15 and initiate ADCA.

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION (continued)

1. Document Number	2. Document Title
TFC-PLN-40	HOISTING AND RIGGING SAFETY MANAGEMENT PROGRAM PLAN
Current Revision - To - Next Revision	

15. Identify all impacted documents and Document Owners, and whether an ADCA needs to be completed

Procedure Number	Procedure Title	Document Owner	ADCA (Yes/No)
N/A			

16. Training (please read):

It is the sole responsibility of the Functional Area Manager, Document Owner, or designee to determine all of the following:

- Training needs, or another method for communication, for a new or document revision (including who should receive training)
- When training/communication should be administered (before or after revision issuance)
- How training/communication should be documented (e.g., by roster).

Training/communication methods can include:

- Formal training [Contact the Training organization for assistance.]
- Tailgate meeting
- Staff meeting
- Required reading.

REVIEWERS

17. Designated Reviewing Organizations:

☐ Assessments	☐ ISMS	☐ Quality Assurance
☐ Communications	☐ Legal	☐ Radiological Control
☐ Contracts	☐ Maintenance	☐ Safety and Health
☐ Emergency Management	☐ Operations	☐ Training
☐ Engineering	☐ PAAA	☐ Waste Management
☐ Environmental	☐ Procedures	☐ Work Planning
☐ Finance	☐ Procurement	☐ 222-S Laboratory
☐ Human Resources	☐ Projects	☒ Other WRPS H&R Committee
☐ Information Resource Management	☐ Property	☐ Not Applicable

APPROVALS

18.

TFC-PLN-100 Interpretive Authority (print and sign)/Date ☐ N/A (see Instructions)

19. USQ

○ USQ

USQ Evaluator (print and sign) & USQ Number/Date

○ USQ-CAT-EX

USQ Evaluator or Individual Designated by NS (print and sign) & USQ Number/Date

○ Out of Scope

Print Name and Sign/Date

20.

Document Owner (print and sign)/Date (Signature also verifies that all comments were resolved)

Functional Area Manager (print and sign)/Date

Procedures (print and sign)/Date

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION INSTRUCTIONS

1) Document Number and Current/Next Revisions: The current document number and current to next revision number or the new document number and revision provided by the Procedures group.

2) Document Title: The title of the document being revised or the title of the new document. (Does the title convey the intent of the document to the user?)

3) Document Type: Indicate document type by marking the appropriate box. (See TFC-PLN-80 for definitions.)

4) Type of Change: New document, a major or minor change to the existing document, periodic review, or cancellation.

5) Initiated by: Name of the person initiating the change.

6) Phone: Enter a cell phone number or office phone number where the initiator can be reached.

7) Mail Stop: The mail stop of the initiator.

8) Date: The date of submittal for the change. (This is not the implementation date or effective date of the change.)

9) Document Owner: The person assigned by the Functional Area Manager (TFC-BSM-AD-C-01, Section 3.2). See document ownership matrix on the procedures web page.

10) Functional Area Manager: The person responsible for implementation of the document (TFC-BSM-AD-C-01, Section 3.1.) See document ownership matrix on the procedures web page.

11) Proposed Changes: Clearly state changes to be made.

12) Reason for Change: Explain why the change is necessary (e.g., the process has to be modified due to a new requirement, change in organizational responsibility).

13) TFC-PLN-100: Review TFC-PLN-100 for impacts. If impacted, list TFC-PLN-100 in block 15 and initiate an ADCA to revise it per TFC-BSM-AD-C-01.

14) RPP-MP-003: Review RPP-MP-003 for impacts. If impacted, list RPP-MP-003 in block 15 and initiate an ADCA to revise it per TFC-BSM-AD-C-01.

15) Impacted Documents: Does the new document or major or minor change affect any other organizations? Does it affect any other procedures (processes) or documents in other organizations? Contact the POCs for the other organizations to ensure impacts have been identified. (Contact the Procedures organization for current POC list.) Perform a search for all references to the document being changed and list those impacted by the change. It is the document owner's responsibility to identify other impacted documents and to fill out the additional ADCAs.

16) Training or Method of Communication: Determine if a new document or document change requires formal training or whether a less formal method of communication is sufficient. Determine the audience that should receive the training/communication and when they should receive such training/communication (before or after document implementation).

17) Designated Reviewing Organizations: List organizations that should review the proposed change. See TFC-BSM-AD-C-01. Identify minimum reviewers. If no reviews are necessary, check "N/A."

18) TFC-PLN-100 Interpretive Authority/Date: Signature by IA indicates completion of review. (Check "N/A" if this revision **does not** <u>change or delete</u> an existing contract requirement implementation, and **does not** <u>add</u> such an implementation.)

19) USQ: USQ evaluator checks the "USQ" block and signs and dates and enters the USQ number when a USQ evaluation is performed. If the change is classified as "inconsequential" as defined by TFC-ENG-SB-C-03, the USQ evaluator or individual designated by Nuclear Safety checks the "USQ-CAT-EX" block, signs and dates, and enters the USQ number. If the document is listed in RPP-27195, no USQ is required; check the "Out of Scope" block and print, sign, and date.

22) Document Owner/Date: By signing, the document owner has reviewed and agrees with the ADCA and that the decisions/choices made address the change and the training necessary. (Signature also verifies that all comments were resolved.)

Functional Area Manager/Date: By signing this block, the Functional Area Manager is giving approval for the new or changed document. (See TFC-BSM-AD-C-01, Section 3.1, for responsibilities of the functional area manager.)

Procedures/Date: Final signature by Procedures prior to issuance of document.

Document: TFC-PLN-40 Rev: C-2
Title: Hoisting and Rigging Safety Management Program Plan
Summary of Change: Revised Section 2.6 to clarify responsibilities of all WRPS organizations and subcontractors as they relate to hoisting and rigging issues.
Effective Date: February 25, 2009
http://idmsweb/idmsprod/livelink.exe/Open/7242862

Ownership matrix

1.0 PURPOSE AND SCOPE

(4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5)

This program plan describes the WRPS organizational roles and responsibilities for implementing "Hanford Site Hoisting and Rigging Manual," DOE-RL-92-36. This program plan supplements but does not duplicate or replace DOE-RL-92-36.

This program plan applies to WRPS and subcontracted organizations that operate hoisting and rigging equipment or perform hoisting and rigging activities for WRPS under DOE-RL-92-36.

NOTE: Forklifts are a part of the requirements for DOE-RL-92-36 and are included in this plan.

2.0 ROLES AND RESPONSIBILTIES

Each director, manager, or organization assigned specific responsibilities below, shall develop implementing procedures as needed. The Safety Programs Manager (document owner of this procedure), will work with the organization in the development plans, procedures, or other documents that implement the hoisting and rigging program for WRPS.

NOTE: Some of the titles used within this procedure are specific to hoisting and rigging program activities and do not necessarily represent an individual's official job title. To identify a specific individual in relation to their responsibility, as defined within this plan, refer to the WRPS Hanford Safety Program web page.

2.1 WRPS Safety and Health Level 2 Manager

The WRPS Safety and Health Level 2 Manager is the functional area manager for this program plan, and is identified within the Documented Safety Analysis (DSA) Safety Management Program as the hoisting and rigging manager.

The Safety and Health Level 2 Manager is responsible for:

- Ensuring that all hoisting and rigging operations and activities performed by WRPS or subcontractor personnel are compliant with DOE-RL-92-36.
- Appointing the Safety Programs Manager as document owner of this program plan and for hoisting and rigging activities.

2.2 Safety Programs Manager

The Safety Programs Manager performs the following duties:

- Serves as the WRPS authority for the review and communication of revisions to the Hanford Site Hoisting and Rigging Manual;
  - Notifies line organizations of revisions to the Hanford Site Hoisting and Rigging Manual or when H&R bulletins, lessons learned, and important issues are received
  - Assists line organizations in addressing hoisting and rigging compliance issues
- Oversees and supports WRPS hoisting and rigging activities, including the review and approval of procedures implementing this plan or the Hanford Site Hoisting and Rigging manual
- Reviews and approves hoisting and rigging safety program procedures
- Reviews, approves, and provides oversight of all construction subcontracts providing hoisting and rigging equipment or services
- Identifies safety professionals for supporting and approving hoisting and rigging activities
- Ensures qualifications of WRPS and subcontractor personnel identified to perform hoisting and rigging activities
- Serves or assigns a designee as the WRPS representative for the Hanford Site Hoisting and Rigging Committee
- Chairs the WRPS Hoisting and Rigging Committee
- Performs an annual management assessment of the hoisting and rigging program
- Performs or directs routine surveillances to verify line organization implementation of the Hoisting and Rigging program
- Participate in (or delegate) incident/accident investigations involving hoisting and rigging equipment or services

  NOTE: Leadership of incident/accident investigations shall typically be performed by a designated representative of the line organization responsible for directing the hoisting and rigging work activities at the time of an event in accordance with the requirements of TFC-OPS-OPER-C-14

- Supports the maintenance of the Hoisting and Rigging Training Program Description (TFC-BSM-TQ-STD-18) to ensure compliance with the Hanford Site Hoisting and Rigging manual and to establish specific WRPS training and qualification requirements for hoist and rigging activities.

2.3 Operations Maintenance Managers (Base Operations, and 222-S Laboratory)

The operation maintenance managers shall perform the following:

- Designate a Hoisting and Rigging Equipment Custodian to ensure inspections, tagging, maintenance and repair of company owned and leased hoisting and rigging equipment
- Document the assignment of a WRPS hoisting and rigging equipment custodian by letter to the Safety Programs Manager
- Serve as members of the WRPS Hoisting and Rigging Committee
- Lead or participate in all incident/accident investigations involving hoisting and rigging activities or services, as appropriate
- Notify the appropriate shift office and Safety Programs Manager after any hoisting and rigging event and prior to any critique or incident investigation
- Notify the Base Operations Projects director, crane coordinator, or blanket master agreement (BMA) buyer's technical representative (BTR), and the Mission Support Contractor Hoisting and Rigging manager of hoisting and rigging incidents that involve equipment and/or services procured from Mission Support Contractor or another Hanford Site contractor
- Provide one week advanced notice to the crane coordinator and the Mission Support Contractor Hoisting and Rigging manager (or assigned delegate) of any hoisting and rigging equipment needs or proposed equipment transfers
- Establish and communicate expectations, and reviews, approves, and provides oversight for all subcontracts for hoisting and rigging equipment or services.

2.4 Construction & Commissioning Forces Management

In the performance of oversight of construction forces subcontractor activities, Construction & Commissioning Forces Management performs the following:

- Establishes and communicates expectations and reviews, approves, and provides oversight for all construction subcontracts for hoisting and rigging equipment or services
- Verify that construction subcontractors perform inspections of hoisting and rigging equipment prior to use
- Ensures construction subcontractors establish controls maintaining their hoisting and rigging equipment used

NOTE: Subcontractors shall use the WRPS equipment tagging program, or shall have an equivalent system approved by the Safety Programs Manager

- Verifies proper qualifications for WRPS and construction subcontractor personnel performing hoisting and rigging activities
- Serve as a member of the WRPS Hoisting and Rigging Committee
- Lead or participate in incident/accident investigations of all hoisting and rigging activities or services, as appropriate
- Notify the appropriate shift office and Safety Programs Manager , as soon as possible after any hoisting and rigging event
- Notifies the Base Operations Projects director, crane coordinator, or blanket master agreement BTR, and the Mission Support Contractor Hoisting and Rigging manager of hoisting and rigging incidents that involve equipment and/or services procured from Mission Support Contractor or another Hanford Site Prime contractor
- Provide one week advanced notice to the crane coordinator and the Mission Support Contractor Hoisting and Rigging manager (or assigned delegate) of any hoisting and rigging equipment needs or proposed equipment transfers
- Establishes and communicates expectations, and reviews, approves, and provides oversight for all construction subcontracts for hoisting and rigging equipment or services.

2.5 Base Operations Projects, Hoisting and Rigging Program Manager

The Base Operations Hoisting and Rigging Operations program manager is responsible for the following activities:

- Serves as the single point-of-contact between WRPS and Mission Support Contractor on all hoisting and rigging issues
- Assigns a single crane coordinator to provide day-to-day scheduling of Mission Support Contractor mobile crane support for operations, projects, and construction
- Ensures the field crane coordinator assigns cranes based on requirements and changing work priorities, including preventive maintenance.

2.6 WRPS Organizations and Subcontractors

All WRPS organizations and subcontractors engaged in hoisting and rigging work activities are responsible for:

- Conducting all field hoisting and rigging activities in compliance with DOE-RL-92-36 and this management plan

- Complying with the Hanford Site Hoisting and Rigging Manual, Chapter 6, TFC-ESHQ-S_IS-C-07 (Powered Industrial Trucks), and TFC-BSM-TQ-STD-18 (Hoisting and Rigging Training Program Description) in all forklift operations

- Conducting periodic field oversight to ensure field H&R activities are conducted in accordance with all applicable requirements.

- Notify the appropriate shift office and Safety Programs H&R SME as soon as possible following any abnormal hoisting and rigging event, and prior to any critique, fact finding, or incident investigation whenever possible.

- Notify the Base Operations Projects director, crane coordinator, or blank master agreement BTR, of hoisting and rigging incidents that involve equipment and/or services procured from the Mission Support Contractor (e.g., Flour Hanford) or other Hanford Site contractor.

- Review determination from the crane and rigging service/maintenance provider to return equipment (e.g., crane, hoist, etc.) to service following an abnormal event or equipment malfunction. This review should include contacting the safety program H&R SME and/or Lead Rigging Engineer to assist in resolving questions or concerns prior to allowing affected equipment to continue operation in TOC facilities.

- Communicate facts surrounding any abnormal H&R event or equipment malfunction (including return to service determination) to affected employees prior to allowing work to resume.

- Notify shift office of a crane or hoist returning to service in TOC facilities following any abnormal H&R event involving the crane or hoist.

- Provide one week advanced notice to the crane coordinator and the Mission Support Contractor Hoisting and Rigging manager (or assigned delegate) of any hoisting and rigging equipment needs or proposed equipment transfers whenever possible.

2.7 Field Work Supervisors (FWS)

All WRPS Hanford field work supervisors overseeing hoisting and rigging work activities are responsible for:

- Coordinating hoisting and rigging activities with the designated leader

- Understanding the overall job plan in order to coordinate other related activities in a safe manner

- Ensure that all hoisting and rigging work is performed safely and within the scope of the current work package

- Stopping the work in the event hazardous conditions develop that endanger personnel, equipment, or process.

2.8 Equipment Custodians

Equipment custodians are responsible for:

- Each overhead and shop crane, hoist, forklift truck, or other hoisting and rigging equipment that requires scheduled maintenance, inspections, and recordkeeping
- Tracking and scheduling and documenting all WRPS hoisting and rigging equipment that requires scheduled maintenance or inspections
- Implementation of the equipment tagging program for WRPS-owned or -leased hoisting and rigging equipment to ensure only equipment with a valid tag is used
- Performing duties as assigned in Section 2.2.8 of "Hanford Site Hoisting and Rigging Manual," DOE-RL-92-36
- Maintaining training and qualifications as defined in the Hoisting and Rigging Training Plan
- The lead hoisting and rigging equipment custodian will maintain a maintenance history file for each piece of WRPS rigging equipment, including:
  - Manufacturer's operation and maintenance manuals
  - Waivers applicable for replacement forks and fork inspections
  - Documentation for replacement forks and fork inspections
  - Inspection procedures and inspection records
  - Records of repair, modification, and overhauls.

2.9 Safety

Line safety organizations shall monitor hoisting and rigging operations to ensure safe performance. In addition, field safety professionals are responsible for the following:

- Perform the duties of the responsible safety organization as defined in Section 2.3.1 of the "Hanford Site Hoisting and Rigging Manual," DOE-RL-92-36
- When requested, approve critical lifts as specified in Chapter 3 of the Hanford Site Hoisting and Rigging Manual
- Review and approve hoisting and rigging processes in hostile environment plans as specified in Chapter 18 of the Hanford Site Hoisting and Rigging Manual
- Perform periodic field oversight and surveillance of hoisting and rigging activities to ensure safety compliance
- Participate in the annual management assessment for hoisting and rigging activities as assigned by the Safety Programs Manager

- Inspect all hoisting and rigging equipment owned or leased by WRPS, and approve for use through the equipment tagging system implemented by the equipment custodians

- Oversee subcontractors inspections and the control of their hoisting and rigging equipment used on WRPS work.

  NOTE: Subcontractors shall use the WRPS equipment tagging program, or shall have an equivalent system approved by the Safety Programs manager for hoisting and rigging operations.

2.10 Quality Assurance

Quality Assurance is responsible for the following:

- Perform periodic surveillances of hoisting and rigging equipment and operations

- Participate in the annual management assessment for hoisting and rigging activities, as assigned by the Safety Program manager.

2.11 Training Department

The Training department is responsible for the following:

- Perform the training organizations responsibilities as defined in Section 2.3.2 of the "Hanford Site Hoisting and Rigging Manual," DOE-RL-92-36

- Serve as a member of the WRPS Hoisting and Rigging Committee

- Participate in the development of the company Hoisting and Rigging Training Program Description consistent with the requirements specified in Hanford Site Hoisting and Rigging Manual.

- Training and Qualifications of personnel on Hoisting and Rigging, including Forklifts is found in TFC-BSM-TQ-STD-18.

2.12 Engineering Department

The Engineering department is responsible for the following:

- Assign qualified rigging engineers

- Assign the lead rigging engineer to serve as a member of the WRPS Hoisting and Rigging Committee and the Hanford Hoisting and Rigging Committee

- Provide rigging engineering services, as required, including the design of lifts plans

- Provide engineering support for the structural evaluation of lifting points, including the maintenance of the lifting point database

- Review and approve critical and special lift plans.

A qualified rigging engineer shall review and approve the procurement of all hoisting and rigging equipment prior to authorizing/commencing work or placing equipment in service.

2.13 Planning/222-S Laboratory Work Planning

Planning and 222-S Laboratory Work Planning are responsible for:

- Ensuring that all hoisting and rigging work is planned in compliance with Hanford Site Hoisting and Rigging Manual, this plan, and other hoisting and rigging implementing procedures
- Ensuring that planners and others involved with planning hoisting and rigging activities are trained in accordance with Hanford Site Hoisting and Rigging Manual.

2.14 Base Operations Projects Hoisting and Rigging Blank Master Agreement Buyer's Technical Representative

The hoisting and rigging blank master agreement BTR is responsible for the following:

- Procure hoisting and rigging services and equipment in accordance with the provisions of the Hanford Site Hoisting and Rigging Manual and the CH2M HILL – Fluor Hanford Memo of Agreement
- Coordinate with the project safety professional for equipment inspections prior to the use of any equipment leased, purchased, or contracted
- Obtain Safety Programs manager approval on all procurements of hoisting and rigging equipment and services.

3.0 RECORDS

No records are generated in the performance of this management plan.

4.0 SOURCES

4.1 Requirements

1. 29 CFR 1910, "Occupational Safety and Health Standards."
2. 29 CFR 1926, "Safety and Health Regulations for Construction."
3. DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual." (S/RID)
4. TFC-PLN-02, "Quality Assurance Program Description."
5. TFC-PLN-32, "Tank Operations Contractor Safety Management Programs."

4.2 References

1. ASME B-30 Series, "Safety Standards Committee for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings."

2. ASME B56.1, "Safety Standard for Low Lift and High Lift Trucks."

3. ASME B56.6, "Safety Standard for Rough Terrain Forklift Trucks."

4. DOE-STD-1090-2001, "Hoisting and Rigging Standard."

5. TFC-CHARTER-31, "Hoisting and Rigging Committee Charter."

6. TFC-ENG-DESIGN-C-22, "Structural Integrity Verification of Lifting Points."

7. TFC-ENG-DESIGN-C-23, "Inspection of Permanent Lifting Points."

8. TFC-BSM-TQ-STD-18, "Hoisting and Rigging Training Program Description."

9. TFC-OPS-MAINT-C-11, "Maintenance and Administration of Tank Operations Contractor Hoisting and Rigging Equipment."

10. TFC-OPS-OPER-C-14, "Event Investigation Process."

Task# WRPS-PER-2008-0189.3

E-STARS[R] Report
Task Detail Report
07/08/2009 1342

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.3		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-02: Perform a documented review of all current contracts for subcontractors performing field work (beyond walk downs a		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 03/02/2009
Reference	WRPS-PER-2008-0189	**Due**	03/03/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-02: Perform a documented review of all current contracts for subcontractors performing field work (beyond walk downs and inspections) for Subcontractor Oversight Plan (A-6003-991) and verify determinations are made in accordance with TFC-ESHQ-S_SAF-C-07, Subcontractor Oversight. Deliverable: Internal Memo to Manager, Safety Programs, citing reviews performed and results of review. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Gaydosh, William L - Assign - Completed with comments - 02/27/2009 1509 *Instructions:* ↳ *Routing List:* Route List - Inactive *Instructions:* • Calderon, Linda M - Assign - Completed with comments - 02/27/2009 1416	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. PER 2009 0189(2).doc

COMMENTS

Poster	Calderon, Linda M - 02/27/2009 1416
	Completed
	A review of BTR's with open field work contracts where subcontractor oversight plans would be required was conducted. The results are attached as an internal memo. Action completed.
Poster	Gaydosh, William L - 02/27/2009 1509

Task# WRPS-PER-2008-0189.3

	Completed		
	Actions taken are adequate to close this items.		
Poster	^PER CAs (Steelman, Tracy L) - 03/02/2009 1132		
	CLOSED		
	PAAA Coordinator reviewed and concurred with closure. tls 3/2/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/03/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

INTEROFFICE MEMORANDUM

washington river protection solutions

WRPS-0900322

Date: February 27, 2009

To: Bill Gaydosh

From: Linda Calderon

Subject: RPS- PER -2009-0189.3

A review of all current contracts involving field work (beyond walk downs and inspections) for Subcontractor Oversight Plans (form A-6003-991) was conducted. The 51 Buyer Technical Representatives (BTRs) were contacted to see if they had open contracts, if they had any contracts that involved field work, and whether they had safety oversight plans for those contracts. The results are attached. There are currently 55 open contracts involving field work. Of those 36 (65%) have oversight plans.

1-2 contracts	8 BTRs
>2 contracts	4 BTRs
No contracts with field work	43 BTRs

There is a relatively small number of BTR's that are doing the greatest number of contracts. Only three BTR's are not using oversight plans.
BTRs that were not using oversight plans used the following reasons:

1. The subcontractor will be working to our work package which has incorporated safety into it and therefore a separate plan is not needed.
2. Blanket orders are reviewed and approved initially, and any new releases are not reviewed and do not have oversight plans, even though the scope of work may be substantially different.
3. Lone Labor agreements for services such as welders, elevator inspectors, painters, sheet metal workers and the like have not had oversight plan because they are only used for a short duration for a specific task.
4. Rental equipment does not have oversight plans because the specifications are written into the contract.

Each BTR contacted did know of the existence of the oversight plans and had considered them in each case. Generally, when the BTR chose not to use the oversight plan, it was a lone decision without consultation with a safety professional.

This review represents a snapshot of the issue with open contracts at this time. Further corrective actions are not planned at this time. The three BTR's without plans will be assisted by safety to complete the plans, as appropriate.

BTR's Subcontractor Oversight Plans

Basche, Amy D;	No Contracts		
Blank, Betsy S;	No Contracts		
Boettger, Jeffrey S;	No Contracts		
Boness, Sharon L;	No Contracts		
Bowman, Tamara;	No Contracts		
Brey, Stephen L;	No Contracts		
Briggs, Stephen R;	No Contracts		
Bunn, Kathie L;	No Contracts		
Burke, Christopher A;	No Contracts		
Burt, David L (Dave);	No Contracts		
Calmus, Ronald B (Ron);	No Contracts		
Castleberry, Jim L;	No Contracts		
Colosi, Kristin A;	No Contracts		
Culbertson, April M;	One Contract	One O/S plan	
Dale, Robert N (Rob);	No Contracts		
Davis, Theodore J (Ted);	13 Contracts	No O/S Plans	WRPS Agreements to FH
Hamm, Earnest R;	No Contracts		
Harty, W M Jr (Mike);	No Contracts		
Haskins, W B (Byrne); '	No Contracts		
Hopkins, Gary P;	2 Contracts	No O/S Plans	
Kelly, William;	No Contracts		
Kitchen, William A;	No Contracts		
Knight, James O (Jim)	No Contracts		
Kummer, David A;	No Contracts		
Le, Tuyet M;	No Contracts		
Lehman, William J (Jerry);	No Contracts		
Lepka, Suzie;	No Contracts		
Lucas, Daniel R (Dan);	No Contracts		
Martin, Loren K;	6 Contracts	6 O/S Plans	
Martinen, Edgar W;	One Contract		
May, Susan M;	28 Contracts	28 O/S Plans	
McLellan, Gregory W;	No Contracts		
Milliken, Nancy J;	One Contract		
O'Toole, Steven M (Steve);	No Contracts		
Parker, Dan L (Danny);	No Contracts		
Parsons, Gregory L (Greg);	No Contracts		
Penick, Lee R;	No Contracts		
Peters, Nanci L;	No Contracts		
Roberts, Mark A;	No Contracts		
Robertson, Randall	One Contract	1 Safety O/S Plan	
Rolph, James T;	No contracts		
Saueressig, David J;	No contracts		
Schofield, John S;	2 Contracts	No O/S Plans	

Stickney, Randall G;	No Contracts
Sutey, Michael J;	No Contracts
Swita, Walter R (Walt);	No Contracts
Tedeschi, Allan R (Rick);	No Contracts
Thien, Michael G;	No Contracts
Vacca, Joseph;	No Contracts
Voogd, Jeffry A;	No Contracts
Williams, C J (Char)	No contracts

51 BTRs	55 Contracts	36 O/S Plans (65%)

Task# WRPS-PER-2008-0189.4

E-STARS[R] Report
Task Detail Report
07/08/2009 1344

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.4		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-03: Revise TFC-BSM-TQ-STD-18, Hoisting and Rigging Training Program		
Parent Task#	WRPS-PER-2008-0189	**Status**	Open
Reference	WRPS-PER-2008-0189	**Due**	12/25/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CC-CA-03: Revise TFC-BSM-TQ-STD-18, Hoisting and Rigging Training Program Description, to ensure subcontractor crane operator training is commensurate with FH crane operator training requirements developed as a result of the training assessment. Deliverable: Modified procedure. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Awaiting Response - Due Date - 12/18/2009 0000 *Instructions:*	
	• Gaydosh, William L - Review - Awaiting Response - Due Date - 12/22/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments

1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf
2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf
3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf
4. Causal Team Charter WRPS-0800028-0810100014[1].pdf
5. Crane Operator Training Brief.htm
6. Crane_Specific_OJE.xdf
7. Link to PER
8. NIOSH Alert-Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Power Lines 95-108.mht
9. PER 2008-0189 CCA Final.doc
10. Re Crane Operator Training Brief.msg

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L) - 03/24/2009 1332
	Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

Task# WRPS-PER-2008-0189.4

Poster	^PER CAs (Steelman, Tracy L) - 03/24/2009 1337
	Approved due date extension to 5/28/09. tls 3/24/09
	Extension Justification: Fluor Hanford has reported through their Corrective Action Managment (CAM) system that their assessment will not be complete until 4/30/09. Additional time will be needed to process the WRPS procedure change after completion of the FH action. The extension was approved by F. Beranek, ESRB Sponsor, on 3/24/09. tls 3/24/09
Poster	^PER Coordinator (Steelman, Tracy L) - 05/22/2009 1401
	Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L) - 05/22/2009 1412
	Approved due date extension to 12/18/09. tls 5/22/09
	Extension Justification: FH action to perform an assessment of crane operator training was completed and Management Assessment #ESH&Q-QA-09-04 was issued on April 23, 2009. The assessment identified five improvements to the crane operator training program. Three of the items are primarily administrative in nature. The other two items represent significant changes to the current crane operator training profile. One of these items is to develop crane specific (rather than class specific) OJT. The second change recommends a crane operator prerequisite course that teaches crane operators what to do should the crane come into contact with overhead power lines. Training requirements for working near overhead power lines and how to avoid them is adequately covered, but the assessment found that crane operating manuals are relied upon to inform operators how to respond to contact with overhead lines, and there are inconsistencies from one manual to the next. The assessment determined that more specific training is needed to make sure crane operators know how to respond if the crane were to inadvertently contact energized overhead power lines. FH has indicated that these actions may not be completed until December 2009. This long lead time is dirven in part by resource constraints as a result of contract transition. COMPENSATORY MEASURES: The TOC is requiring subcontracted crane operators to have demonstrated proficiency on the specific crane they are operating through the SOW and qualification submittal process. This is validated either by documented hours of operating within the past year, or a current crane specific evaluation prior to operation of a particular crane. TOC has also requested FH to provide verification of similar compensatory measures. The TOC training department is deveoping a training brief on how to respond to inadvertent contact with energized overhead power lines that will be presented to current subcontractor crane operators and will be included in the subcontractor crane operator briefing package for additional crane operators as they come on site. This training brief will also be provided to FH crane and rigging. ETC for this training brief is June 5, 2009. The extension was approved by F. Beranek, ESRB Sponsor, on 5/22/09. tls 5/22/09

TASK DUE DATE HISTORY

Modified	05/22/2009 1401 - ^PER Coordinator	**New Due Date**	12/18/2009 0000
Modified	03/24/2009 1333 - ^PER Coordinator	**New Due Date**	05/28/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	04/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

From: Kramer, Timothy F
Sent: Thursday, June 11, 2009 10:09 AM
To: Hamilton, Peggy; Butler, Ralph E
Cc: Lesko, Karen F; Davis, Steven A; Martin, Loren K; Boasen, Robin L; Kramer, Timothy F; Gaydosh, William L
Subject: Crane Operator Training Brief
Attachments: Crane_Specific_OJE.xdf; NIOSH Alert-Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Power Lines 95-108.mht

Peggy / Ralph,

Please make sure our construction crane operators (and any others that may benefit from it) are briefed using the attached NIOSH Alert and document on a training roster. This is a compensatory measure (section 4 of the first attachment) committed to the ESRB as part of extending a SIG PER action item regarding crane operator training. When complete please send me a PDF of the roster to be attached to the PER.

Loren.....part of the compensatory measure was to also provide the briefing material to FH C&R for their consideration.

Robin.....please keep original signed roster in the construction crane operator briefing folder.

Thanks everyone,
Tim K.

SPER/CORRECTIVE ACTION/END POINT ASSESSMENT EXTENSION/CHANGE/TRANSFER REQUEST	Check all that apply ☒ Extension ☐ Transfer ☐ Change

ESRB Scheduled Meeting/Due Date 05/26/09	PER No. WRPS-PER-2008-0189
ESTARS Task No. WRPS-PER-2008-0189.4	Requestor Name/Responsible Manager Tim Kramer / Bill Gaydosh
Title Potential adverse trend in crane operations has been observed	Requested Extension Date 12/18/09
Is this NTS Reportable? ◉ Yes ○ No NTS Report No. NTS Corrective Action No.	Occurrence Report ○ Yes ◉ No

1. Corrective Action Description (and proposed change, if applicable):

Revise TFC-BSM-TQ-STD-18, Hoisting and Rigging Training Program Description, to ensure subcontractor crane operator training is commensurate with Flour Hanford (FH) crane operator training requirements developed as a result of their training assessment.

2. Justification of Extension or Change: **NOTE:** Occurrence Report PERs (SC-2, SC-R, SC-1), any text change to a corrective action previously entered in ORPS must be updated in ORPS (forward to CH2M OR representative) with Facility Representative approval.

FH action to perform an assessment of crane operator training was completed and Management Assessment #ESH&Q-QA-09-04 issued on April 23, 2009. The assessment identified five improvements to the crane operator training program. Three of the items are primarily administrative in nature. The other two items represent significant changes to the current crane operator training profile. One of these items is to develop crane specific (rather than class specific) OJT.

The second change recommends a crane operator prerequisite course that teaches crane operators what to do should the crane come into contact with overhead power lines. Training requirements for working near overhead power lines and how to avoid them is adequately covered, but the assessment found that crane operating manuals are relied upon to inform operators how to respond to contact with overhead lines, and there are inconsistencies from one manual to the next. The assessment determined that more specific training is needed to make sure crane operators know how to respond if the crane were to inadvertently contact energized overhead power lines.

FH has indicated that these actions may not be completed until December, 2009. This long lead time is driven in part by resource constraints as a result of contract transition.

3. Brief Progress Status:

One of the recommendations from the TOC crane causal analysis was to develop a Hoisting and Rigging Safety Standard to consolidate various TOC H&R requirements from multiple procedures into a single document. This recommendation was adopted and the Safety Standard (TFC-ESHQ-S-STD-28, REV A) was released on May 8, 2009. This standard incorporated H&R training requirements from TFC-BSM-TQ-STD-18 and cancelled that document. Crane operator training improvements developed as a result of the FH assessment will be included in TFC-ESHQ-S-STD-28 as soon as they are completed.

4. Identification of Immediate or Compensatory Measures Taken Which Reduce the Risk of Extending or Changing the Corrective Action:

The TOC is requiring subcontracted crane operators to have demonstrated proficiency on the specific crane they are operating through the SOW and qualification submittal process. This is validated either by documented hours of operation within the past year, or a current crane specific evaluation prior to operation of a particular crane. TOC has also requested FH to provide verification of similar compensatory measures.

SPER/CORRECTIVE ACTION/END POINT ASSESSMENT EXTENSION/CHANGE/TRANSFER REQUEST	Check all that apply ☒ Extension ☐ Transfer ☐ Change

PER No. WRPS-PER-2008-0189

The TOC training department is developing a training brief on how to respond to inadvertent contact with energized overhead power lines that will be presented to current subcontractor crane operators and included in the subcontractor crane operator briefing package for additional crane operators as they come on site. This training brief will also be provided to FH crane and rigging. ETC for this training brief is June 5, 2009.

5. Related Issues

There is one additional TOC action from the causal analysis which is being effected by late completion of FH action. This is an additional FH assessment of their crane maintenance program. TOC action is to evaluate impact of this assessment to WRPS.

Relinquishing Manager Approval *(if transfer)*:	Responsible Manager Approval *(if transfer, accepting manager's signature)*:
(Name/Signature) (Date)	(Name/Signature) (Date)
PAAA Director Approval (if NTS):	ESRB Sponsor Approval:
(Name/Signature) (Date)	(Name/Signature) (Date)

Esta página en Español

Request for Assistance in...

Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Power Lines

NIOSH ALERT: May 1995
DHHS (NIOSH) Publication No. 95-108

95-108sum.pdf (Worker/Employer Summary Sheet Only) (372 kb) 2 pages
View all Alerts

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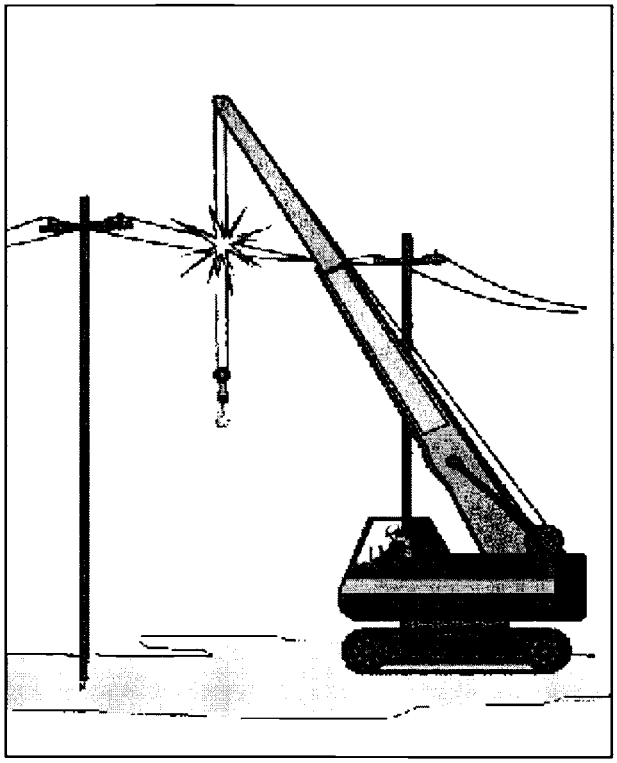
WARNING!

Crane operators and crew members may be electrocuted when they work near overhead power lines.

The National Institute for Occupational Safety and Health (NIOSH) requests assistance in preventing electrocutions of crane operators and crew members working near overhead power lines. Recent NIOSH investigations suggest that employers, supervisors, and workers may not be fully aware of the hazards of operating cranes near overhead power lines or may not implement the proper safety procedures for controlling these hazards. This Alert describes five cases (six electrocutions) that resulted from such hazards and makes recommendations for preventing similar incidents. The Alert updates a previous NIOSH Alert published in July 1985 [NIOSH 1985].

The recommendations in this Alert should be followed by all employers, managers, supervisors, and workers in companies that use cranes or similar boomed vehicles. NIOSH requests that the following individuals and organizations bring this Alert to the attention of workers who are at risk: editors of trade journals, safety and health officials, construction companies, unions, suppliers and manufacturers of building materials, crane manufacturers, electric utilities, and others who use cranes or boomed vehicles.



Workers are killed each year when cranes contact overhead power lines.

BACKGROUND

NTOF Data

Data from the NIOSH National Traumatic Occupational Fatalities (NTOF) Surveillance System indicate that electrocutions accounted for approximately 450 (7%) of the 6,400 work-related deaths from injury that occurred annually in the United States during the period 1980-89 [NIOSH 1993a]. Each year an average of 15 electrocutions were caused by contact between cranes or similar boomed vehicles and energized, overhead power lines. The actual number of workers who died from crane contact with energized power lines is higher than reported by NTOF because methods for collecting and reporting these data tend to underestimate the total number of deaths [NIOSH 1993a]. More than half of these crane-related electrocutions occurred in the construction industry.

FACE Data

From 1982 through 1994, NIOSH conducted 226 onsite investigations of work-related electrocutions under the Fatality Assessment and Control Evaluation (FACE) Program. Twenty-nine (13%) of these incidents (which resulted in 31 fatalities) involved crane contact with overhead power lines. Nearly half of the incidents occurred in the construction industry. Because the FACE investigations were conducted in only 16 states, these fatalities represent only a portion of the crane-related electrocutions during the period 1982-94.

OSHA Data

A study conducted by the Occupational Safety and Health Administration (OSHA) showed that 377 (65%) of 580 work-related electrocutions occurred in the construction industry during the period 1985-89 [OSHA 1990]. Nearly 30% (113) of these electrocutions involved cranes.

CURRENT STANDARDS

OSHA Regulations

Current OSHA regulations require employers to take precautions when cranes and boomed vehicles are operated near overhead power lines. Any overhead power line shall be considered energized unless the owner of the line or the electric utility company indicates that it has been de-energized and it is visibly grounded [29 CFR 1926.550 (a)(15)(vi)]. The OSHA regulations are summarized as follows:

- Employers shall ensure that overhead power lines are de-energized or separated from the crane and its load by implementing one or more of the following procedures:

  –De-energize and visibly ground electrical distribution and transmission lines [29 CFR 1910.333(c)(3); 29 CFR 1926.550(a)(15)]

  –Use independent insulated barriers to prevent physical contact with the power lines [29 CFR 1910.333(c)(3); 29 CFR 1926. 550(a)(15)]

  –Maintain minimum clearance between energized power lines and the crane and its load [29 CFR 1910.333(c)(3)(iii); 29 CFR 1926.550(a)(15)(i), (ii), (iii)].

- Where it is difficult for the crane operator to maintain clearance by visual means, a person shall be designated to observe the clearance between the energized power lines and the crane and its load [29 CFR 1926.550(a)(15)(iv)].

- The use of cage-type boom guards, insulating links, or proximity warning devices shall not alter the need to follow required precautions [29 CFR 1926.550 (a)(15)(v)]. These devices are not a substitute for de-energizing and grounding lines or maintaining safe line clearances.

ANSI Standard

The American National Standards Institute (ANSI) has published a standard for mobile and locomotive cranes that includes operation near overhead power lines [ANSI 1994]. This consensus standard (B30.5-1994) contains guidelines for preventing contact between cranes and electrical energy. The standard addresses the following issues:

- Considering any overhead wire to be energized unless and until the person owning the line or the utility authorities verify that the line is not energized

- De-energizing power lines before work begins, erecting insulated barriers to prevent physical contact with the energized lines, or maintaining safe clearance between the energized lines and boomed equipment

- Limitations of cage-type boom guards, insulating links, and proximity warning devices

- Notifying line owners before work is performed near power lines

- Posting warnings on cranes cautioning the operators to maintain safe clearance between energized power lines and their equipment

CSA Recommendations

The Construction Safety Association of Ontario, Canada (CSA) recommends safe work practices in addition to those addressed in the OSHA and ANSI standards [CSA 1982]. These recommendations include the following.

Work Practices

- Operate the crane at a slower-than-normal rate in the vicinity of power lines.
- Exercise caution near long spans of overhead power lines, since wind can cause the power lines to sway laterally and reduce the clearance between the crane and the power line.
- Mark safe routes where cranes must repeatedly travel beneath power lines.
- Exercise caution when travelling over uneven ground that could cause the crane to weave or bob into power lines.
- Keep all personnel well away from the crane whenever it is close to power lines.
- Prohibit persons from touching the crane or its load until a signal person indicates that it is safe to do so.

The CSA recommendations also address the limitations of proximity warning devices, hook insulators, insulating boom guards, swing limit stops, nonconductive taglines, ground rods, and similar devices for protection against electrical hazards.

Procedures to Follow If Contact Occurs

To protect against electrical shock injury in the event of contact between a crane and an energized line, the CSA recommends the following:

- The crane operator should remain inside the cab.
- All other personnel should keep away from the crane, ropes, and load, since the ground around the machine might be energized.
- The crane operator should try to remove the crane from contact by moving it in the reverse direction from that which caused the contact.
- If the crane cannot be moved away from contact, the operator should remain inside cab until the lines have been de-ener gized.

CASE REPORTS

The five cases presented here were investigated by the NIOSH FACE Program between March 1990 and March 1993.

Case No. 1--One Death

On March 1, 1990, a 29-year-old worker was electrocuted when he pushed the crane cable on a 1-yard cement bucket into a 7,200-volt power line. The victim was a member of a crew that was constructing the back concrete wall of an underground water-holding tank at a sewage treatment plant. Before work on the tank began, the company safety director made sure that insulated line hoses were placed over sections of the power line near the jobsite and that a safe clearance zone was marked off for arriving cement trucks to use for loading their cement buckets.

After the wall was poured, the driver of the cement truck cleaned the loading chute on his truck with a water hose mounted on the truck. As he began to pull away, the crew supervisor yelled to him, asking if the crew could use his water hose to wash out the cement bucket suspended from the crane. The driver stopped the truck under the power line and the crane operator (not realizing that the truck had been moved) swung the boom to position the bucket behind the truck. The victim grasped the handle of the bucket door and pushed down to open it, bringing the crane cable into contact with the power line. The victim provided a path to ground and was electrocuted [NIOSH 1990b].

Case No. 2--One Death

On August 11, 1990, a 33-year-old well driller was electrocuted when a metal pipe lifted by a truck-mounted crane contacted a 12,000-volt overhead power line. The victim and a coworker were repairing a submersible pump for a water well at a private residence. The well was located in a pasture with three parallel power lines overhead. One of the power lines passed directly over the well (32 feet above the ground). On the day of the incident, the victim positioned the truck-mounted crane beneath the power line. Using a handheld remote-control pendant, the victim fully extended the end of the boom 36 feet above the ground. The crane cable was attached to a 1-inch-diameter galvanized pipe that ran to the pump inside the well. As the victim raised the pipe, it contacted the power line directly above the well, energizing the crane and the handheld remote-control pendant. The victim provided a path to ground and was electrocuted [NIOSH 1990c].

Case No. 3--One Death

On August 22, 1990, a 24-year-old foreman for a telecommunications company was electrocuted when he grabbed the door handle on a truck-mounted crane whose boom was in contact with a 7,200-volt overhead power line. The foreman and three other workers (a lineman, a cable splicer, and a laborer) were attempting to remove four poles that had supported a billboard. The poles stood 20 feet high and were buried 5 feet in the ground. They were located 15 feet away from (and parallel to) the power line. To remove the poles, the lineman positioned the crane directly under the power line. He controlled the crane boom while standing on the ground using rubber-coated hand controls mounted on the back of the truck. The poles were removed by hooking the crane boom cable around the middle of each pole and vertically pulling each pole out of the ground. While the workers were pulling out the third pole, the end of the boom contacted the overhead power line. The laborer (who was working in the back of the truck) noticed that the lineman was being shocked and was unable to let go of the hand control. The laborer kicked the lineman in the chest and the lineman fell unconscious to the ground. He revived without assistance about 3 minutes later with electrical burns to his left hand. However, the crane boom remained in contact with the power line, the truck tires ignited, and the truck began to burn. When the foreman noticed that the boom remained in contact with the power line, he tried to open one of the truck doors (presumably to move the truck). When his hand contacted the door handle, he provided a path to ground and was electrocuted [NIOSH 1990a].

Case No. 4--One Death

On June 24, 1991, a 37-year-old construction laborer was electrocuted while pulling a wire rope attached to a crane cable toward a load. The choker was to be connected to a steel roof joist that was to be lifted 150 feet across the roof of a one-story school and set in place. The cab of the crane was positioned 11 feet 6 inches from a 7200-volt power line. After a previous roof joist had been set in place, the crane operator swung the crane boom and cable back toward the victim, who grabbed the choker in his left hand. With his right hand, he held onto a steel rod that had been driven into the ground nearby. At this point, the momentum of the swinging crane apparently caused the crane cable to contact the power line. The electrical current passed across the victim's chest and through the steel rod to ground, causing his electrocution [NIOSH 1991].

Case No. 5--Two Deaths

On March 31, 1993, a 20-year-old male truck driver and his 70-year-old male employer (the company

president) were electrocuted when the boom of a truck-mounted crane contacted a 7,200-volt conductor of an overhead power line. The incident occurred while the driver was unloading concrete blocks at a residential construction site. The driver had backed the truck up the steeply sloped driveway under a power line at the site and was using the crane to unload a cube of concrete blocks. The company president and a masonry contractor watched as the driver operated the crane by a handheld remote-control unit. The driver was having difficulty unloading the blocks because the truck was parked at a steep angle. While all three men watched the blocks, the tip of the crane boom contacted a conductor of the overhead power line and completed a path to ground through the truck, the remote control unit, and the driver. The company president attempted to render assistance and apparently contacted the truck, completing a path to ground through his body. He died on the scene. The truck driver was airlifted to a nearby burn center where he later died as a result of electrical burns [NIOSH 1993b].

CONCLUSIONS

These case reports indicate that some crane operators, their employers and supervisors, and others who work around cranes may not be fully aware of the hazards of operating cranes near overhead power lines or may not implement the proper safety procedures for controlling these hazards.

RECOMMENDATIONS

NIOSH recommends that employers take the following measures to protect workers and operators of cranes and other boomed vehicles from contacting energized overhead power lines.

Comply with OSHA Regulations

- Train workers to comply with current OSHA regulations. These regulations require workers and employers to consider all overhead power lines to be energized until (1) the owner of the lines or the electric utility indicates that they are not energized, and (2) they have been visibly grounded [29 CFR 1910.333 (c)(3); 29 CFR 1926.550(a)(15)].

- Employers shall ensure that overhead power lines are de-energized or separated from the crane and its load by implementing one or more of the following [29 CFR 1910.333(c)(3); 29 CFR 1926.550(a)(15)]:

  –De-energize and visibly ground electrical distribution and transmission lines at the point of work

  –Use insulated barriers that are not a part of the crane to prevent contact with the lines

  –If the power lines are not de-energized, operate cranes in the area ONLY if a safe minimum clearance is maintained as follows:

  At least 10 feet for lines rated 50 kilovolts or below

  At least 10 feet plus 0.4 inch for each kilovolt above 50 kilovolts; or maintain twice the length of the line insulator (but never less than 10 feet)

- Where it is difficult for the crane operator to maintain safe clearance by visual means, designate a person to observe the clearance and to give immediate warning when the crane approaches the limits of safe clearance [29 CFR 1926.550(a) (15)(iv)].

- Do not use cage-type boom guards, insulating links, or proximity warning devices as a substitute for de-energizing and grounding lines or maintaining safe clearance [29 CFR 1926.550(a)(15)(v)].

Follow ANSI Guidelines

Train workers to follow ANSI guidelines for operating cranes near overhead power lines (ANSI Standard B30.5-1994, 5-3.4.5)[ANSI 1994]. These guidelines recommend posting signs at the operator's station and on the outside of the crane warning that electrocution may occur if workers do not maintain safe minimum clearance that equals or exceeds OSHA requirements as follows:

Power line voltage phase to phase (kV)	Minimum safe clearance (feet)
50 or below	10
Above 50 to 200	15
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	45

Notify Power Line Owners

Before beginning operations near electrical lines, notify the owners of the lines or their authorized representatives and provide them with all pertinent information: type of equipment (including length of boom) and date, time, and type of work involved. Request the cooperation of the owner to de-energize and ground the lines or to help provide insulated barriers. NIOSH encourages employers to consider de-energization (where possible) as the primary means of preventing injury from contact between cranes and power lines.

Develop Safety Programs

Develop and implement written safety programs to help workers recognize and control the hazards of crane contact with overhead power lines.

Evaluate Jobsites

Evaluate jobsites before beginning work to determine the safest areas for material storage, the best placement for machinery during operations, and the size and type of machinery to be used.

Know the location and voltage of all overhead power lines at the jobsite before operating or working with any crane.

Research has shown that it is difficult to judge accurately the distance to an overhead object such as a power line [Middendorf 1978]. Therefore, NIOSH recommends that no other duties or responsibilities be assigned when workers are designated to observe clearance during crane movement or operation.

Evaluate Alternative Work Methods

Evaluate alternative work methods that do not require the use of cranes. For example, it may be possible to use concrete pumping trucks instead of crane-suspended buckets for placing concrete near overhead power lines. Alternative methods should be carefully evaluated to ensure that they do not introduce new hazards into the

workplace.

Train Workers

Ensure that workers assigned to operate cranes and other boomed vehicles are specifically trained in safe operating procedures. Also ensure that workers are trained (1) to understand the limitations of such devices as boom guards, insulated lines, ground rods, nonconductive links, and proximity warning devices, and (2) to recognize that these devices are not substitutes for de-energizing and grounding lines or maintaining safe clearance. Workers should also be trained to recognize the hazards and use proper techniques when rescuing coworkers or recovering equipment in contact with electrical energy. CSA guidelines list techniques that can be used when equipment contacts energized power lines [CSA 1982] (see Current Standards in this Alert).

All employers and workers should be trained in cardiopulmonary resuscitation (CPR).

Call for Help

Ensure that workers are provided with a quick means of summoning assistance when an emergency occurs.

Develop Safer Equipment

Encourage the manufacturers of cranes and other boomed vehicles to consider developing truck-mounted cranes with electrically isolated crane control systems, such as those that use fiber optic conductors to transmit control signals.

ACKNOWLEDGMENTS

The principal contributor to this Alert is Paul H. Moore, Division of Safety Research. Please direct any comments, questions, or requests for additional information to the following:

Director
Division of Safety Research
National Institute for Occupational Safety and Health
1095 Willowdale Road
Morgantown, WV 26505-2888
Telephone, (304) 285-5894; or call 1-800-35-NIOSH (1-800-356-4674).

We greatly appreciate your assistance in protecting the health of U.S. workers.

Linda Rosenstock, M.D., M.P.H.
Director, National Institute for
Occupational Safety and Health
Centers for Disease Control and Prevention

REFERENCES

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Middendorf L [1978]. Judging clearance distances near overhead power lines. In: Proceedings of the Human Factors Society, 22nd annual meeting. Santa Monica, CA: Human Factors Society, Inc.

NIOSH [1985]. NIOSH Alert: request for assistance in preventing electrocutions from contact between cranes and power lines. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 85-111.

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Crane Alert--DHHS (NIOSH) Publication No. 95-108

Go back to the NIOSH home page or to the CDC home page.

Message

From: Martin, Loren K

Sent: Thursday, June 11, 2009 10:15 AM

To: Kramer, Timothy F; Hamilton, Peggy; Butler, Ralph E

Cc: Lesko, Karen F; Davis, Steven A; Boasen, Robin L; Gaydosh, William L

Subject: Re: Crane Operator Training Brief

Will ensure this is shared with Fluor / Jacobs Engineering.
Loren

From: Kramer, Timothy F
To: Hamilton, Peggy; Butler, Ralph E
Cc: Lesko, Karen F; Davis, Steven A; Martin, Loren K; Boasen, Robin L; Kramer, Timothy F; Gaydosh, William L
Sent: Thu Jun 11 10:09:11 2009
Subject: Crane Operator Training Brief

Peggy / Ralph,

Please make sure our construction crane operators (and any others that may benefit from it) are briefed using the attached NIOSH Alert and document on a training roster. This is a compensatory measure (section 4 of the first attachment) committed to the ESRB as part of extending a SIG PER action item regarding crane operator training. When complete please send me a PDF of the roster to be attached to the PER.

Loren.....part of the compensatory measure was to also provide the briefing material to FH C&R for their consideration.

Robin.....please keep original signed roster in the construction crane operator briefing folder.

Thanks everyone,
Tim K.

Task# WRPS-PER-2008-0189.5

E-STARS[R] Report
Task Detail Report
07/08/2009 1347

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.5		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-04: Formally communicate to all subcontractors with existing contracts for performing crane operations in tank farms o		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 02/19/2009
Reference	WRPS-PER-2008-0189	**Due**	02/25/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-04: Formally communicate to all subcontractors with existing contracts for performing crane operations in tank farms of the changes to TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, generated as a result of corrective actions in this report. Deliverable: Copies of communications to subcontractors. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Lesko, Karen F - Assign - Completed with comments - 02/18/2009 1740 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 02/19/2009 0710 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. Formal communication to subcontractor

COMMENTS

Poster	Lesko, Karen F - 02/18/2009 1738
	Letter sent subcontractor - closure
	A letter (AEI-22337-OC-08-011) was sent to the subcontractor performing hoisting and rigging activities in the Tank Farms. the letter was sent 12/18/08. Procurement confirmed that there are no other subcontractors performing hoisting and rigging activities.
Poster	Lesko, Karen F - 02/18/2009 1740
	Completed

Task# WRPS-PER-2008-0189.5

	A letter (attached) was sent to the subcontractor performing hoisting and rigging activities in the Tank Farms.
Poster	Gaydosh, William L - 02/19/2009 0710
	I have reveiwed Ms. Lesko's actions and I concur with them. B. Gaydosh 2.19.09
Poster	Gaydosh, William L - 02/19/2009 0710
	Concur
	I concur with teh action taken by Ms. Lesko. B. Gaydosh 2.19.09
Poster	^PER CAs (Steelman, Tracy L) - 02/19/2009 0716
	CLOSED
	PAAA concurred with closure. tls 2/19/09

TASK DUE DATE HISTORY

Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/25/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Lesko, Karen F

From: Lesko, Karen F
Sent: Wednesday, February 18, 2009 5:34 PM
To: Lesko, Karen F
Subject: Revision to TFC-ENG-FACSUP-C-25, Rev: B-4, Hoisting and Rigging

---

From: Sheehy, Robert
Sent: Tuesday, February 17, 2009 6:37 AM
To: Lesko, Karen F; Robinson, John M
Cc: Boasen, Robin L
Subject: RE: PAAA Corrective Action Due on 2/19/2009

Karen:

At this time AEI is the only contractor presently working in the tank farms. As you are aware TSS will be starting some clean up in RMAs, but I am unaware that there will be any hoisting and rigging performed.

Rob Sheehy

373-3425

From: Lesko, Karen F
Sent: Monday, February 16, 2009 9:40 PM
To: Robinson, John M; Sheehy, Robert
Cc: Boasen, Robin L; Lesko, Karen F
Subject: FW: PAAA Corrective Action Due on 2/19/2009

John and Rob - a letter was already sent to AEI on this (AEI-22337-OC-08-011), and we need to send the same information to any other subcontractors who have existing contracts for performing crane operations in tank farms. Are there any others? Can you send the information to Robin so we can get letters out and close this item? Thanks, Karen

Letter sent to AEI:

From: Boasen, Robin L [mailto:Robin_L_Boasen@rl.gov] **On Behalf Of** Lesko, Karen F
Sent: Friday, December 19, 2008 8:33 AM
To: 'JGonzalez@americanelectricwa.com'
Cc: Lesko, Karen F; Farner, Monte; Fuller, Lisa; Dougherty, Barbara; Nixie, Dennis A; Stredwick, John; Moore, David; Atkins, Larry B; Boasen, Robin L; Nixie, Dennis; Moore, David; Leliefeld, Kenneth; Butler, Ralph E; Butler, Ralph; Kerr, Noel; Beaumier, Glenn R; Breianne Dowell; Powers, Michael J; Kramer, Timothy F; Hopkins, Gary P; Sheehy, Robert; Luchi, John M

Subject: AEI-22337-OC-08-011, Contract Number 22337 - Washington River Protection Solutions LLC Crane and Rigging Training Materials

washingtonriver protectionsolutions

December 18, 2008 AEI-22337-OC-08-011

Mr. Joe Gonzalez

American Electric, Inc.

1999 Butler Loop

Richland, Washington 99352

Dear Mr. Gonzalez:

CONTRACT NUMBER 22337 – WASHINGTON RIVER PROTECTION SOLUTIONS LLC HOISTING AND RIGGING TRAINING MATERIALS AND PROCEDURE

Washington River Protection Solutions LLC (WRPS) Construction and Commissioning is requiring that the enclosures on hoisting and rigging training materials be discussed and copies given to all crane operators (all subcontracts) performing or supporting WRPS Tank Farms' construction activities.

Also enclosed for review and discussion is the revision to WRPS procedure TFC-ENG-FACSUP-C-25, Rev: B-4, *Hoisting and Rigging*. The summary of changes is as follows:

- Added a step to section 4.0 to help ensure mobile operations are performed safely.
- Deleted a step from section 4.1 that required additional signatures.
- Added a step to section 4.1 to provide direction on revision requirements for special lists.
- Inserted new item 9 to section 4.1 to ensure safe crane operations when the load is 90% or more

of the rated crane capacity.

- Deleted section 4.2.b because there are no significant facility worker hazards.
- Added section 4.2.e to ensure safe crane operations when load capacity is 90% or more of crane capacity.
- Removed note from section 4.2 which no longer applies.
- Updated organizational names.

American Electric, Inc. is required to submit electronic documentation to Ms. Barbara Dougherty (Barbara_A_Dougherty@rl.gov) and Ms. Robin Boasen (Robin_L_Boasen@rl.gov) no later than January 9, 2008, that the actions listed above have been completed.

You may contact me at 372-9249 with any questions regarding this matter.

Sincerely,

Karen F. Lesko

Construction and Commissioning Manager

KFL:RLB

Enclosures (7):

7-GN-068, Crane & Rigging Services Maintenance Procedure *Monthly Mobile Crane Inspections*

7-GN-097, Crane & Rigging Services Maintenance Procedure *Frequent Inspection of Mobile Cranes*

7-GN-179, Crane & Rigging Services Maintenance Procedure *Annual Mobile Crane Inspections*

Crane Pool Annual Mobile Crane Inspection

Mobile Crane rental Fleet

Operating Errors

TFC-ENG-FACSUP-C-25, Hoisting and Rigging

Task# WRPS-PER-2008-0189.6

E-STARS[R] Report
Task Detail Report
07/08/2009 1348

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.6		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-05: Modify TFC-OPS-OPER-C-14, Event Investigation Process, section 4.2, Conduct a Fact-Finding, to include involvement		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 03/11/2009
Reference	WRPS-PER-2008-0189	**Due**	03/21/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-05: Modify TFC-OPS-OPER-C-14, Event Investigation Process, section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process. Deliverable: Modification to TFC-OPS-OPER-C-14, Event Investigation Process, section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Tackett, Liz A - Assign - Completed with comments - 03/10/2009 1537 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 03/10/2009 1548 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. RE Event Investigation Procedure Revision for ESTARS 2008-0189.6.htm 8. TFC-OPS-OPER-C-14 Rev D-1 to next.doc

COMMENTS

Poster	Tackett, Liz A - 03/10/2009 1537
	Completed
	See attachments
Poster	Gaydosh, William L - 03/10/2009 1548
	Concur

Task# WRPS-PER-2008-0189.6			
	TFC-OPS-OPER-C-14 has been changed to include the required verniage.		
Poster	^PER CAs (Steelman, Tracy L) - 03/11/2009 0851		
	CLOSED		
	Reviewed and closed. tls 3/11/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

From: Brown, Robert L
Sent: Tuesday, March 10, 2009 2:55 PM
To: Waters, Shaun F
Cc: Tackett, Elizabeth
Subject: RE: Event Investigation Procedure Revision for ESTARS 2008-0189.6
Insofar as addressing the issues identified during the Causal Analysis, the changes are satisfactory.

From: Waters, Shaun F
Sent: Tuesday, March 03, 2009 12:33 PM
To: Brown, Robert L
Cc: Tackett, Elizabeth
Subject: Event Investigation Procedure Revision for ESTARS 2008-0189.6

Bob,

We are currently in a total rewrite of the event investigation procedure which will include moving it to the ESHQ manual. As this endeavor will take some time, we are going to submit a change that should address E-Stars corrective action WRPS-PER-2008-0189.6;

> *CC-CA-05: Modify TFC-OPS-OPER-C-14, Event Investigation Process, section 4.2, Conduct a Fact-Finding, to include involvement of subject matter experts and address protocol for the use of group meetings in the fact finding process.*

Section 4.2, step 3, bullet 2, will be revised to include "...and subject matter experts (e.g., chemical, electrical, radiological, mechanical, crane and rigging, etc.)..."

It is still our intent to conduct fact-findings at an individual level with meetings moving to the critique section of the procedure. That specific change will be beefed up in the total rewrite we are currently undertaking. So, it is our proposal, to address this portion of the corrective action, to incorporate into this revision (which will carry over), removal of group interview and force use of the critique process if a meeting is to be convened.

There are additional changes in this revision I've attached for your review. I will be submitting the ADCA in the next day or two to get this process rolling.

Regards,
Shaun

WRPS Occurrence Reporting
Security & Emerg Services/Events & Investigations
MO-284/200 East Area
509.373.3457 / 509.438.9785
MSIN: S5-23
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Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1)

This procedure implements a formal process of ensuring significant issues at Tank Operations Contractor (TOC) facilities are aggressively investigated and documented. Prompt (as soon as practicable after the event, typically the same shift or the next working day) investigation of events and conditions is important so facilities can assess the impact of each event or condition, determine causes, and identify corrective actions to prevent recurrence. An investigation is appropriate for all events, conditions, "near misses," or other indications of situations within or outside the operations organization that, if uncorrected, can adversely affect safety, health, quality assurance, safeguards and security, operations, or the environment.

This investigation process directly feeds into the problem evaluation process where causes and corrective actions are determined.

NOTE: The Hanford Fire Department has the primary responsibility of conducting fire investigations assisted by the TOC where necessary.

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

Facility personnel must take appropriate immediate action to stabilize and/or place the facility/operation in a safe condition and ensure that any potential environmental effects are stabilized and workers are treated for injuries sustained. Though actions should be taken to preserve conditions for investigation, they should not interfere with establishing a safe condition.

4.1 Event Investigation Initiation

See Figure 1 for process flowchart.

TOC Personnel	1.	Promptly notify the operations manager of events or conditions that, if uncorrected, can adversely affect safety, health, quality assurance, safeguards and security, operations, or the environment.
Operations Manager	2.	If the event involves employees in testing designated positions, review the "Occurrence Testing" section of the Safe and Drug Free Workplace procedure (TFC-BSM-HR_EP-C-03) and proceed accordingly. (7.1.2)
	3.	Using the guidance in Attachment A as the minimum criteria, determine if an event investigation is warranted and at what level.
	4.	If a formal investigation is **NOT** warranted, exit this procedure.

5. Make proper notifications in accordance with TFC-OPS-OPER-CD-01.

6. Assign the next sequential event investigation report number.

   NOTE: Base Operations shift office (373-2689) maintains the event investigation report index log.

7. Ensure a Problem Evaluation Request (PER) was generated capturing the problem and associated event investigation determination.

8. Provide turnover to the responsible manager of current status at the event scene, actions taken and planned, and any environmental, radiological, or industrial safety concerns.

Responsible Manager

9. If it was determined a fact-finding investigation is required, go to Section 4.2.

10. If it was determined a critique investigation is required, go to Section 4.3.

11. If it was determined an Event Investigation Team (EIT) investigation is required, go to Section 4.4.

4.2 Conduct a Fact-Finding

A fact-finding is a low level investigation (typically consisting of one or two individuals~~ or small group interviews with involved personnel~~) that seeks to understand the precursors leading to the event~~ and potential causes~~.

See Figure 2 for process flowchart.

NOTE: If a meeting is to be convened, go to Section 4.3.~~Meetings where large groups of personnel or multiple organizations are involved should be conducted as a critique~~.

Responsible Manager

1. Assign a qualified fact-finding lead (Attachment B) and provide a briefing on the event.

2. Confirm with the fact-finding lead the desired content of the event investigation report (Attachment C) and the dates for the following deliverables:

   - Verbal briefing (typically in two business days)
   - Draft event investigation report (typically 15 calendar days)
   - Final event investigation report (typically 30 calendar days)

Fact-Finding Lead

3. Without adversely interfering with ongoing activities:

   - Review the technical work document (work package, procedure, engineering change notice, etc.) in use at the time of the event

- Interview involved personnel and subject matter experts (e.g., chemical, electrical, radiological, mechanical, crane and rigging, etc.) to solicit/clarify facts as necessary

NOTE: A HAMTC safety representative should be present when interviewing bargaining unit employees

4. Develop a representative event timeline.

5. Verbally brief the responsible manager as directed. The briefing should include, at a minimum, the content of the final event investigation report.

Responsible Manager

6. If the fact-finding results indicate a more serious issue exists, determine if initiating a critique (Section 4.3) or an EIT investigation (Section 4.4) is warranted.

~~7. Verbally brief senior management at the next Safety Analysis Center (SAC) meeting.~~

Fact-Finding Lead

~~8.~~7. Draft the event investigation report and distribute for comment to the responsible manager and personnel contacted during the investigation.

Fact-Finding Lead/ Responsible Manager

~~9.~~8. Finalize the event investigation report considering any comments received and distribute per Section 4.5.

4.3 Conduct a Critique
(7.1.3)

A critique is a mid level investigation (typically consisting of a large group meeting with involved personnel or several impacted organizations) that seeks to understand the precursors leading to the event including an evaluation of compensatory actions taken, potential causes and extent of condition.

See Figure 3 for process flowchart.

NOTE: The critique meeting shall not override any operating or emergency procedure requirements for immediate or subsequent corrective actions, or any emergency requirements for identification and declaration of an emergency.

Responsible Manager

1. Assign a qualified critique leader (Attachment B) and provide a briefing on the event. The briefing should identifying the appropriate individuals to attend the critique meeting:

- Personnel directly involved in the event
- Manager from the affected organization(s)
- Office of River Protection (ORP) and Defense Nuclear Facility Safety Board (DNFSB) representative (at their discretion)
- Subject matter experts (radiological, engineering, safety,

Electrical Safety Committee member for electrical safety events, and Hoisting and Rigging Program manager for applicable events)

- HAMTC safety representative.

2. Confirm with the critique leader the desired content of the event investigation report (Attachment C) and the due dates for the following deliverables:

   - Verbal briefing (typically in two business days)
   - Draft event investigation report (typically 15 calendar days)
   - Final event investigation report (typically 30 calendar days)

Critique Leader

3. Without adversely interfering with event stabilization:

   - Collect documentation (e.g., procedures/work packages, operating logs, equipment charts, round sheets, radiological survey reports, preliminary event fact-finding/critique report, etc.)

   - Obtain statements from personnel involved in the event, if necessary (A-6003-098)

     NOTE: Personal statements should be obtained soon as possible after an event and documented independent of one another

   - Collect failed equipment

   - Obtain photographs/drawings

   - Develop a map of the event site including location of involved personnel

4. Schedule critique meeting as soon as adequate information from step 3 is obtained (typically within 24 hours of the event occurrence).

   NOTE: Attendance should be limited to those personnel necessary to determine the facts of the event and verify adequate compensatory measures are in place. **All others should be discouraged from attending**. Other "interested" and "affected" personnel should be debriefed after the critique either by scheduling a meeting or expanding distribution of the preliminary event investigation report.

5. Prior to conducting the critique meeting, ensure the appropriate personnel are in attendance or reschedule meeting to a time and location when critical individuals are available.

6. Assign an individual to take notes.

7. Document critique meeting attendance by attendee's signature

(A-6003-100).

8. Conduct the critique meeting using the outline in Attachment D.

9. Prior to concluding the critique meeting, review the objectives with the critique members to ensure that the critique objectives have been satisfied.

10. Conduct additional critique meetings or follow-up investigations, as needed, if it is determined that all of the facts were not established during the critique meeting. If necessary, schedule lessons learned sessions to focus on what went well and what needs to be improved.

    NOTE: A HAMTC safety representative should be present when interviewing bargaining unit employees.

11. Verbally brief the responsible manager as directed. The brief should include, at a minimum, the content of the final event investigation report.

Responsible Manager

12. If the critique results indicate a more serious issue exists, determine if initiating an EIT investigation (Section 4.4) is warranted.

~~13. Verbally brief senior management at the next SAC meeting.~~

Critique Leader

~~14.~~13. Draft the event investigation report and distribute for comment to the responsible manager, critique members and personnel contacted during the investigation.

Critique Leader/ Responsible Manager

~~15.~~14. Finalize the event investigation report considering any comments received and distribute per Section 4.5.

4.4 Conduct an Event Investigation Team Investigation

An event investigation team is a multi-discipline group that may be activated based on the results of a fact-finding/critique or when the event is significant enough that the responsible manager has deemed this level of investigation necessary to understand the cause.

See Figure 4 for process flowchart.

NOTE: The EIT shall not override any immediate or subsequent corrective actions or any emergency requirements for identification and declaration of an emergency.

Responsible Manager

1. Identify personnel who will serve as members on the EIT for the duration of the investigation verifying their qualification and availability. The structure of the EIT should consider inclusion of the following (see Attachment A for qualifications):

   - An EIT leader
   - A person trained in root cause analysis and apparent cause analysis

- A qualified critique leader (if requested by the EIT leader)
- Subject matter experts (e.g., safety, engineering, quality, radiological control, Electrical Safety Committee member for electrical safety events, etc.)
- PER responsible manager (once determined)
- HAMTC safety representative or HAMTC sanctioned back-up to the HAMTC safety representative

2. Brief the EIT Leader on the event and expectations for the investigation.

3. Confirm with the EIT leader the desired content of the event investigation report (Attachment C) and the due dates for the following deliverables:

   - Verbal briefing (typically two business days)
   - Draft event investigation report (typically 15 calendar days)
   - Final event investigation report (typically 30 calendar days).

4. Issue an interoffice memorandum chartering the EIT. The memorandum should at a minimum identify the EIT leader and team members, the purpose and scope of the investigation, and the date of the final report.

EIT Leader

5. Determine if the event investigation can be conducted during normal working hours, or, if deemed appropriate, obtain management approval to work to completion.

6. Assemble and brief EIT members on the event and expectations for the investigation.

7. Without adversely interfering with event stabilization, assign EIT members to:

   - Collect documentation (e.g., procedures/work packages, operating logs, equipment charts, round sheets, radiological survey reports, preliminary event fact-finding/critique report, etc.)
   - Obtain statements from personnel involved in the event (A-6003-098)

     NOTE: Personal statements should be obtained soon as possible after an event and documented independent of one another.

   - Perform interviews with involved personnel to solicit/clarify facts

- Collect failed equipment
- Obtain photographs/drawings
- Develop a map of the event site including location of involved personnel
- Perform and document (if applicable) a walkdown of the event site

EIT

8. If a fact-finding/critique event investigation report was issued, evaluate the effectiveness of any compensatory measures taken using the **SMART** (**S**pecific, **M**easurable, **A**ccountable, **R**easonable, **T**imely) criteria (TFC-ESHQ-Q_ADM-C-11).

9. Reconstruct the event to develop a timeline while evaluating facility equipment response, procedure adequacy, human factors and barriers that could have prevented the incident.

EIT Leader

10. Verbally brief the responsible manager as directed. The brief should include, at a minimum, the content of the final event investigation report.

~~Responsible Manager~~ ~~11.~~ ~~Verbally brief senior management at the next SAC meeting.~~

EIT Leader

~~12.~~11. Draft the event investigation report and distribute for comment to the responsible manager, EIT members and personnel contacted during the investigation (e.g., critique meeting participants if a critique meeting was conducted).

EIT Leader/ Responsible Manager

~~13.~~12. Finalize the event investigation report considering any comments received and distribute per Section 4.5.

4.5 Distribute Event Investigation Report

See Figure 5 for process flowchart.

Fact-Finding Lead/ Critique Leader/ EIT Leader

1. Via interoffice memorandum (template), issue the final event investigation report to the responsible manager and following distribution:

   - Level 1 Managers of ~~222-S Laboratory;~~ Base Operations; Engineering; Project Integration; SST Retrieval & SST Retrieval & Closure Operations; Environment, Safety, Health & Quality Assurance; Employee Concerns; External Affairs; Gen Counsel & Internal Audit; and Project Controls
   - Performance assurance/corrective action lead
   - Responsible manager's manager
   - PAAA Coordinator

- Attending HAMTC Safety Representative
- Attending ORP/DNFSB Representative(s).

2. Provide Security~~ &~~, Emergency Services~~/Events &~~, Event Investigation and Reporting, and PAAA (SEERIP) with an electronic version of the final event investigating report.

~~Security & Emergency Services/ Events & Investigation~~SEERIP

3. Conduct review of report for "Official Use Only" (OUO) applicability. If the report is not OUO applicable:
   - Upload the electronic version of the final event investigation report to the website~~.~~, and
   - Attach the electronic version of the final event investigation report to the PER~~.~~

~~4. Attach the electronic version of the final event investigation report to the PER.~~

Responsible Manager

~~5.~~4. Resolve the PER in accordance with TFC-ESHQ-Q_C-C-01, documenting how issues and recommendations identified during the investigation were addressed.

~~6.~~5. Provide timely feedback to the work force of lessons learned and actions taken, through appropriate communication channels. (7.1.4)

~~4.6 Perform Program Evaluation~~

~~Security & Emergency Services/ Events & Investigation~~

~~1. Schedule a specialty assessment to perform an evaluation of the event investigation program. The program should be assessed every two years. Assessment personnel assigned should include at least one person trained to the minimum qualification for an event investigation team leader and a trained assessment team member (as defined in TFC-ESHQ-AP-C-01).~~

~~Assigned Assessment Leader~~

~~2. Review a sample of event investigation reports from the prior 12 to 18 months (minimum of 10% of reports issued during the time period) and the associated PERs and corrective actions.~~

~~3. Perform additional documentation reviews and employee interviews, as necessary, to determine if the event investigations produced sufficient information to complete the problem evaluations and ultimately lead to effective corrective action planning.~~

~~4. Record the results of the assessment, including problems identified and recommendations for improvement, if appropriate. Guidance for the report format can be found in TFC-ESHQ-AP-C-01.~~

~~Security & Emergency Services/~~

~~5. Issue the specialty assessment report, and associated PERs if necessary, in accordance with TFC-ESHQ-AP-C-01 and TFC-ESHQ-Q_C-C-01.~~

~~Events & Investigation~~

5.0 DEFINITIONS

Operations Manager. For the purpose of this procedure, the operations manager is the individual responsible for the day-to-day operation of the laboratory or tank farm facilities.

Responsible Manager. For the purpose of this procedure, the responsible manager is the individual whose organizational responsibilities include the systems, equipment, or personnel that are related to the event requiring investigation or the manager assigned responsibility to oversee PER resolution, corrective action planning, and issue closure.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP/NA	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Event Investigation Personal Statement Form (A-6003-098)	N	Y	L	ADM-17.32a	N	Performing Organization
Event Investigation Critique Meeting Attendance Form (A-6003-100)	N	Y	L	ADM-17.32a	N	Performing Organization
Event Investigation Report	N	Y	L	ADM-17.32a	N	Performing Organization

The identified records custodian is responsible for record retention and retirement in accordance with TFC-BSM-IRM_DC-C-02 for PER records.

Retention of reference material and additional copies of records will be per department Records Inventory and Disposition Schedule.

7.0 SOURCES

7.1 Requirements

1. DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities."
2. TFC-BSM-HR_EP-C-03, "Safe and Drug-Free Workplace."
3. HNF-5183, "Tank Farm Radiological Control Manual (TFRCM)," Part 351.
4. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor."

7.2 References

1. DOE-STD-1045-93, "Guide to Good Practices for Notifications and Investigation of Abnormal Events."
2. TFC-BSM-IRM_DC-C-02, "Records Management."

3. TFC-CHARTER-27, "WRPS Electrical Safety Committee."

4. TFC-ESHQ-AP-C-01, "Management Assessment."

5. TFC-ESHQ-FP-STD-12, "Hanford Fire Department Services."

6. TFC-ESHQ-Q_ADM-C-11, "Root and Common Cause Analysis and Corrective Action Planning."

7. TFC-ESHQ-Q_C-C-01, "Problem Evaluation Request."

8. TFC-ESHQ-Q_C-C-04, "Safety Analysis Center Process."

9. TFC-OPS-OPER-C-24, "Occurrence Reporting and Processing of Operations Information."

10. TFC-OPS-OPER-CD-01, "Event Notification."

11. TFC-PLN-05, "Conduct Of Operations Implementation Plan."

Figure 1. Investigation Initiation.

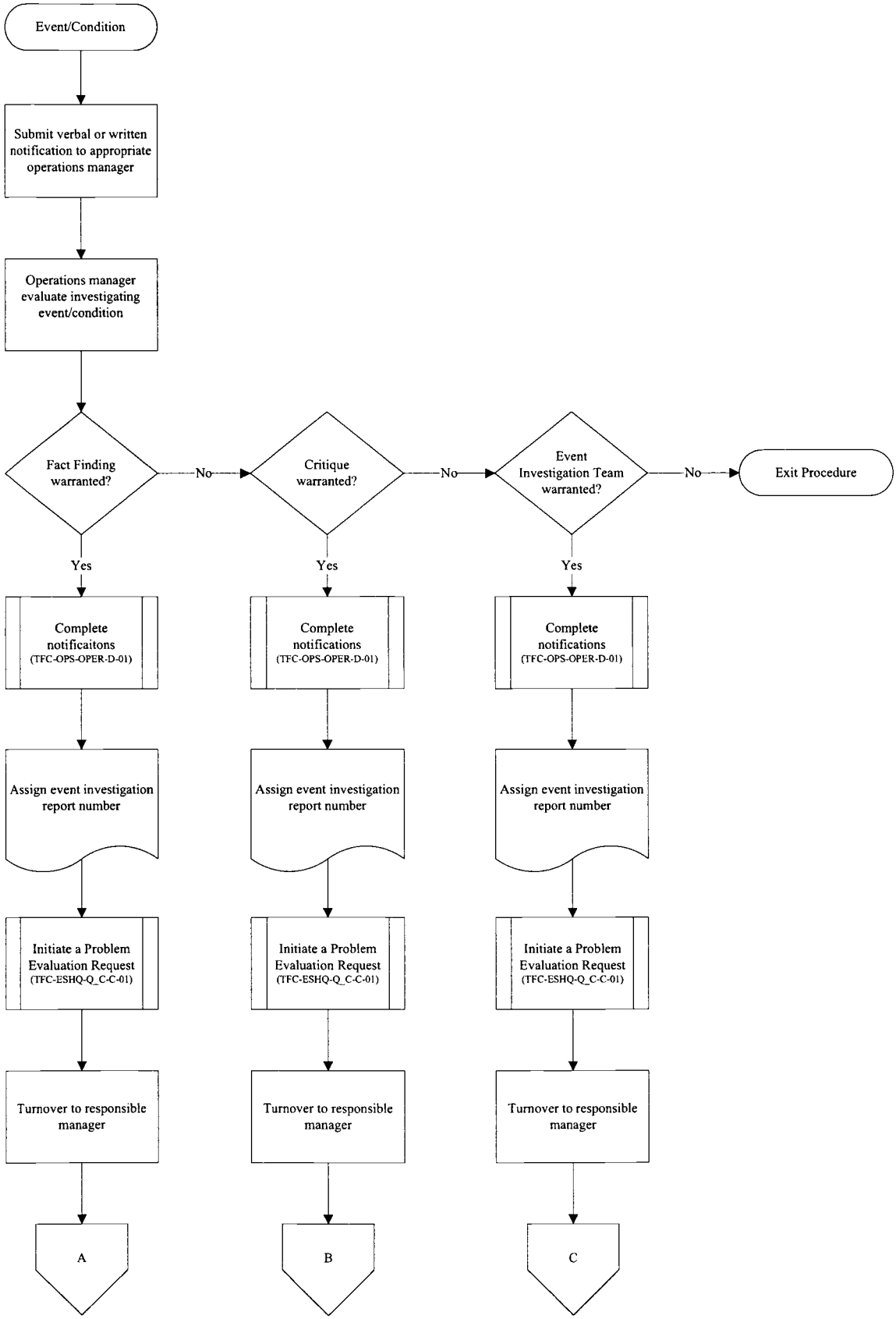


Figure 2. Fact-Finding

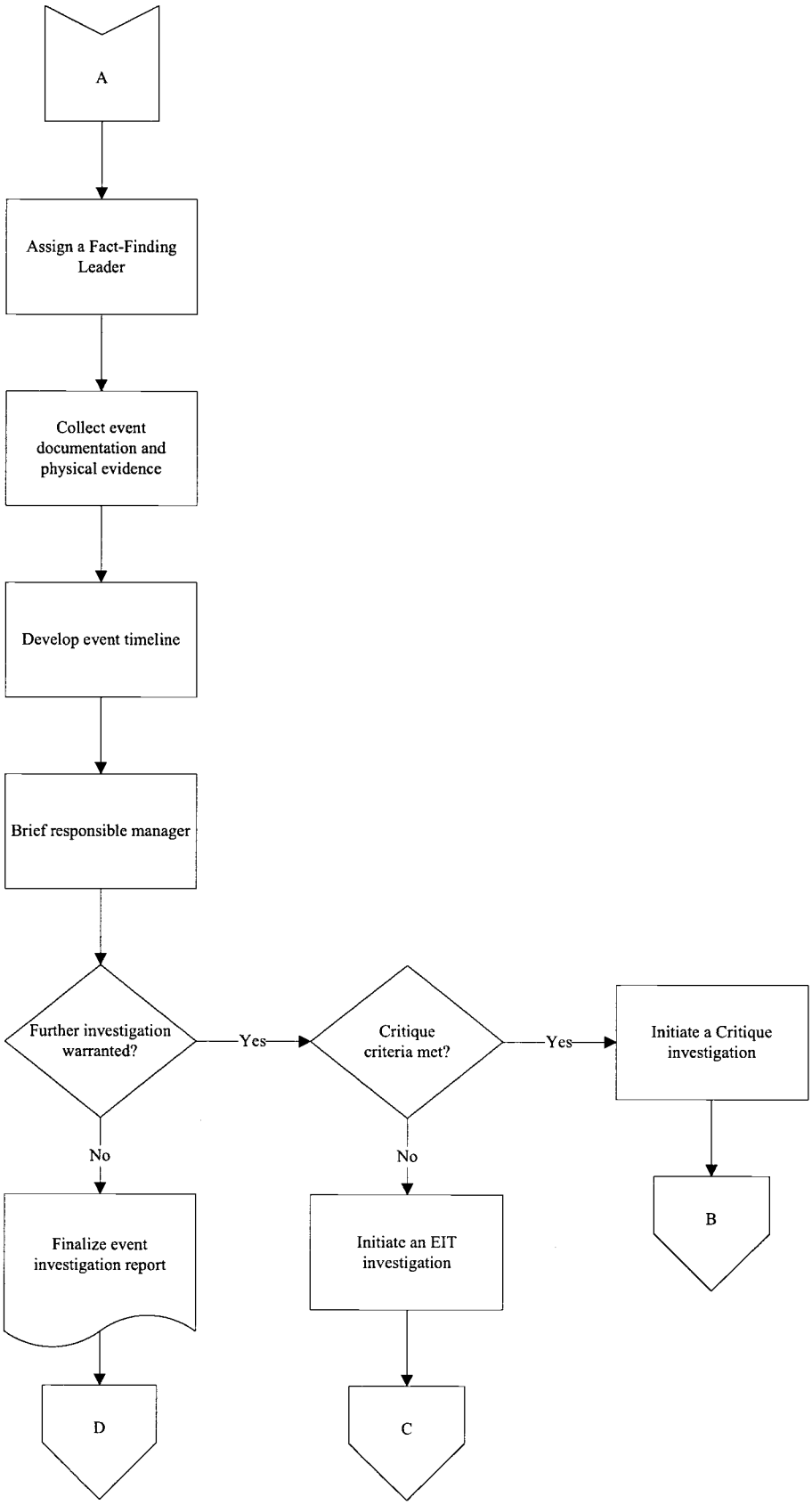


Figure 3. Critique

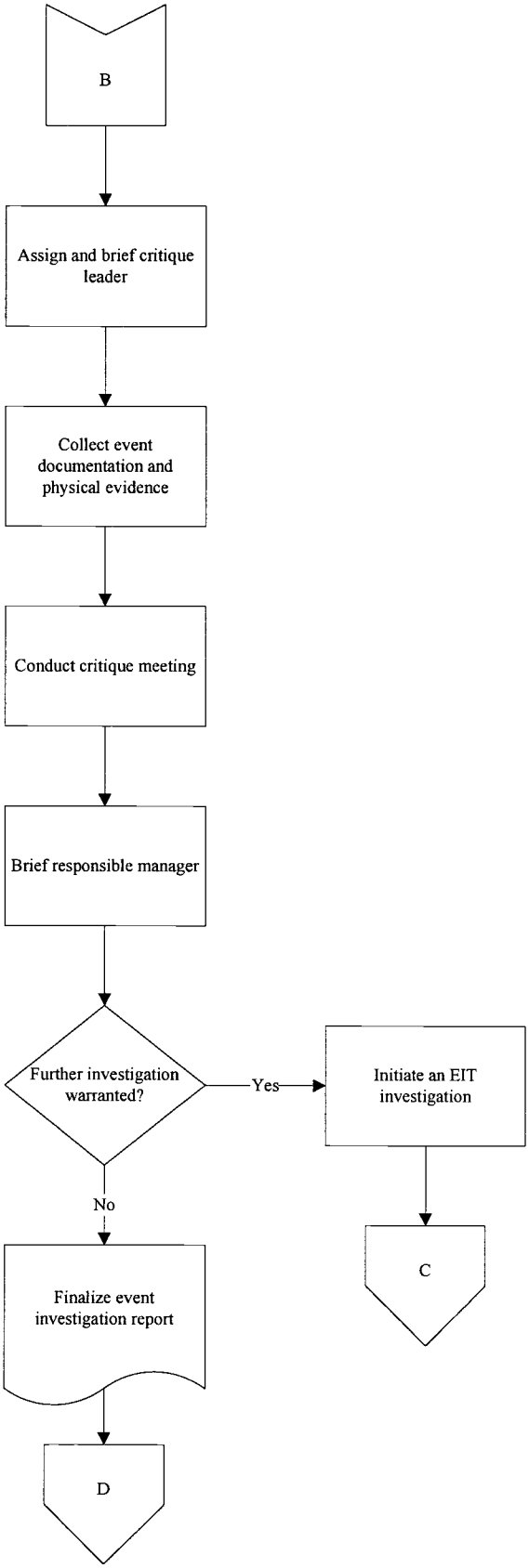


Figure 4. Event Investigation Team

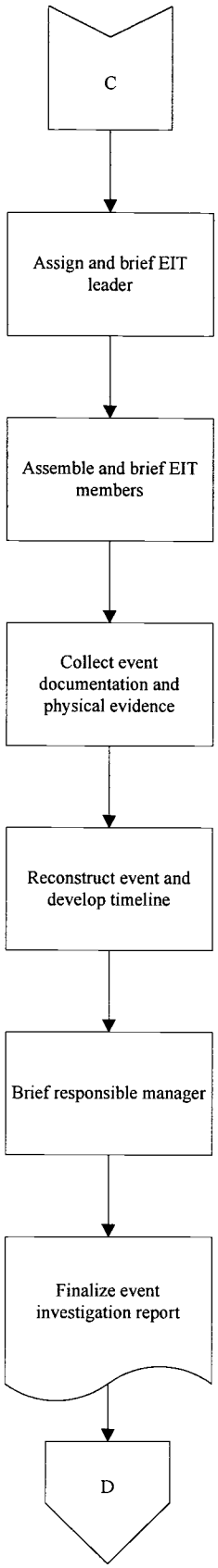
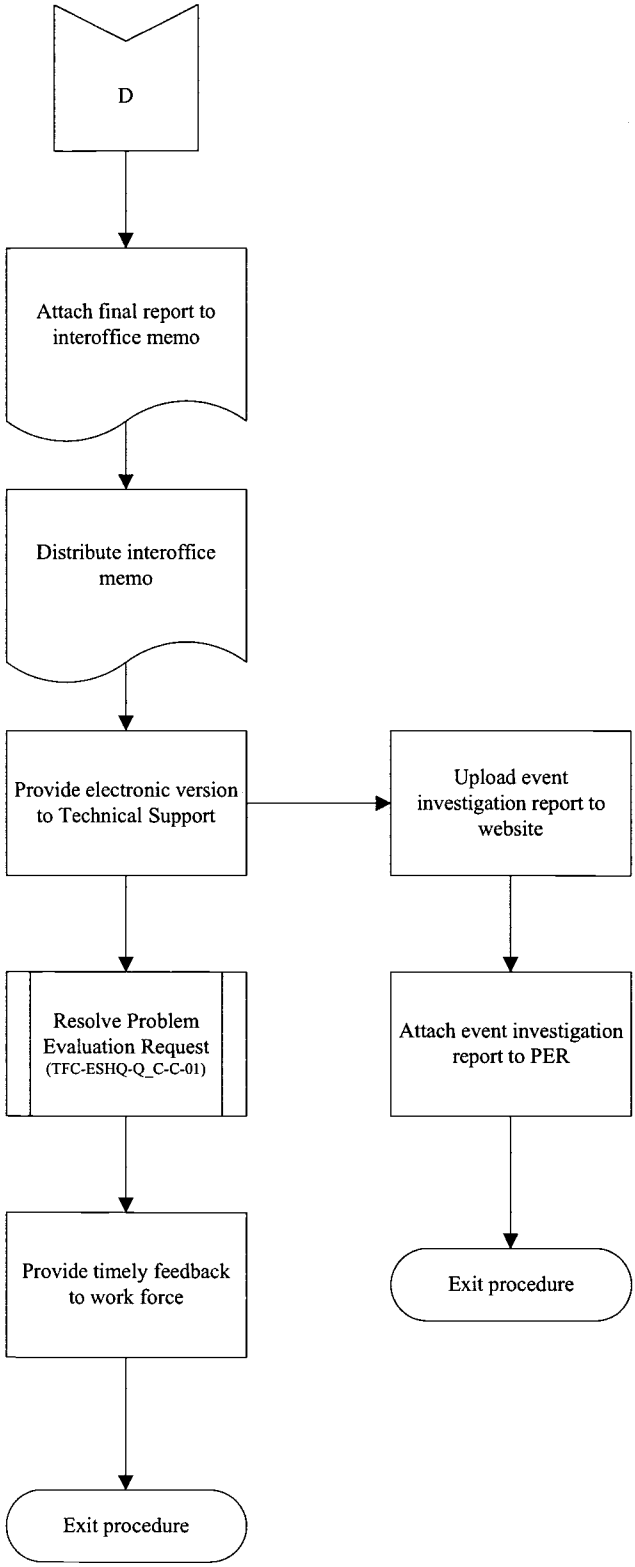


Figure 5. Distribute Report



ATTACHMENT A - EVENT INVESTIGATION THRESHOLD

Responsible managers shall determine the appropriate level of investigation using at least the level shown below to meet minimum requirements.

If the level required is uncertain, investigations should be conducted following the higher level.

If an investigation has progressed to the critique or formal event investigation team stage and facts indicate that continuing the critique or team investigation is no longer required, the responsible manager may discontinue the investigation and document the decision with justification in a fact-finding report.

Fact-Finding

A low level investigation that seeks to understand the precursors leading to the event~~ and potential causes~~.	Required for Significance Category (SC) 3, minor impact events, as defined in TFC-OPS-OPER-C-24. NOTE: The Injury Investigation and Reporting process, as described in TFC-ESHQ-S_CMLI-C-02, meets the requirements for a fact finding for illness/injury events.

Critique

A mid level investigation that seeks to understand the precursors leading to the event including an evaluation of compensatory actions taken and extent of condition.	Required for SC-2, moderate impact events, as defined in TFC-OPS-OPER-C-24. NOTE: The USQ evaluation and analysis process, as described in TFC-ENG-SB-C-03, meets the requirements for a critique (or fact finding) for a PISA or Positive USQ event.

Event Investigation Team

A formal high level investigation that seeks to understand the precursors leading to the event including an evaluation of compensatory actions taken, potential causes, failed barriers and extent of condition providing recommendations and lessons learned.	Required for Operational Emergencies, SC-1, significant impact events, and SC-R (recurring events), as defined in TFC-OPS-OPER-C-24. NOTE: A root cause analysis team, as described in TFC-ESHQ-Q_ADM-C-11, also meets the requirements for a formal investigation team. The responsible line organization Manager may assemble a root cause team to take over the investigation from an EIT or instead of an EIT.

ATTACHMENT B - QUALIFICATIONS

Fact-Finding:

Personnel assigned to perform fact-finding activities need to be technically qualified, i.e., familiar with the facility and equipment operation and have completed, at a minimum, "Apparent Cause Analysis" (course # 357011).

Critique:

Personnel assigned to perform critiques must have completed the "Critique Leader On The Job Checklist Guide" (course # 354231) and have completed, at a minimum, "Apparent Cause Analysis" (course # 357011).

Event Investigation Team:

Leader - Personnel assigned the team leader responsibility must have completed, at a minimum, "Apparent Cause Analysis" (course # 357011).

Member - Personnel assigned as team members should be technically qualified, knowledgeable of factors affecting human performance, trained in investigative methods (e.g., common cause analysis, interviewing techniques, etc.), and able to maintain an unbiased attitude in relation to the event being investigated and the personnel involved at the time of the occurrence.

At a minimum, one team member of the team must have completed "Advanced Root Cause and Common Cause Training" (course # 357010).

ATTACHMENT C - EVENT INVESTIGATION REPORT CONTENT SUMMARY

Fact-Finding minimum report content (template)

Summary of the Investigation (high level summary)

Timeline of event (date/time correlation)

Discussion of potential causes (human performance/programmatic/organizational issues)

Attachments:
1. List of personnel contacted

Critique minimum report content (template)

Summary of the Investigation (high level summary)

Timeline of event (date/time correlation)

Compensatory measures (list measure taken, expected result and results at the time of the event report issuance)

Discussion of potential causes (human performance issues/programmatic/organizational issues)

Extent of condition review (does condition exist elsewhere? Impact on operations/programs?)

Attachments:
1. List of personnel contacted

Event Investigation Team minimum report content (template)

Summary of the Investigation (high level summary)

Timeline of event (date/time correlation)

Compensatory measures (list measure taken, expected result and results at the time of the event report issuance)

Discussion of potential causes (human performance issues/programmatic/organizational issues)

Discussion of barriers that could have impacted the cause (discuss engineering and administrative barriers that were in place that failed or should have been in place)

Extent of condition review (does condition exist elsewhere? Impact on operations/programs?)

Recommendations

Lessons Learned (review like events to extract Lessons Learned as a result of trend analysis)

Attachments:
1. List of personnel contacted

ATTACHMENT D - SAMPLE CRITIQUE MEETING OUTLINE

- **Safety Topic**
- **Introductions** (attendance roster)
- **Purpose/Objective** Opening Statement
  "Before we get started, I would like to review the purpose and ground rules of this critique meeting. First and foremost, this critique is not to place blame or point fingers, but to obtain an understanding of the facts surrounding the event so a representative event timeline/sequence of events can be developed.

  I will conduct this meeting in an open manner seeing that it remains focused and on-track covering one topic at a time. Everyone having knowledge on the present topic is encouraged to participate though I ask any observers to refrain from asking questions until the end of the meeting and address their questions to me only. Once we have sufficiently covered the present topic, we will proceed with the next topic until all are complete.

  Remember, our main interest is obtaining the facts surrounding the event and verify compensatory measures are in place and adequate; corrective actions to prevent recurrence will be evaluated separate from this meeting.

  Are there any questions before we begin?"

- **Event Summary**
  - Describe the event being investigated. Information derived during the initial investigation and interviews shall be used. The description should include the errors made by the event participants.
  - Describe the systems and equipment in a manner that all can understand. The information presented must be sufficient for the critique meeting attendees to clearly understand what happened, as well as why and how it impacted the facility.

- **Event Reconstruction** (chronological account and details of the event)
  - Questions to be Asked (Who, what, when, where, how? Pre-Job Brief? Change in work activity? Change in work scope? Reporting? Communication?)
  - Immediate Actions Taken (Maintain the facility in a safe condition, Mitigate the event/condition)
  - Proposed Additional Immediate Actions to be Taken

- **Objective Review**
  - Have sufficient actions been taken to stabilize the event scene and provide adequate compensatory measures?
  - Is there enough information from the critique to determine if this event is reportable (e.g., ORP, state)?
  - Is there enough information available to:
  - Understand what happened?
  - Understand why the event happened?
  - Determine if a follow-up critique or additional investigation is necessary?
  - Has the event been examined thoroughly and are all known facts recorded to support further event analysis at the conclusion of the critique meeting?

Task# WRPS-PER-2008-0189.7

E-STARS[R] Report
Task Detail Report
07/08/2009 1351

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.7		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-06: Revise TF-AOP-020, Response for Placing Personnel and Equipment in a Safe Condition, section 2.0 to clearly addres		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 03/13/2009
Reference	WRPS-PER-2008-0189	**Due**	03/21/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-06: Revise TF-AOP-020, Response for Placing Personnel and Equipment in a Safe Condition, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria. Deliverable: Revisions to TF-AOP-020, Response for Placing Personnel and Equipment in a Safe Condition, section 2.0 to clearly address entry criteria and subsequent sections based on any modifications to entry criteria. NOTE: This revision need not be issued until April 15, 2009, to accommodate the training and briefings contained in CC-CA-07 and CC-CA-08. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Reynolds, Tammy R - Assign - Completed with comments - 03/13/2009 0951 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 03/13/2009 1053 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. 2008-0189.7 and 8-E-Mail Re AOP 20 Revision.htm 5. add.pdf 6. Causal Team Charter WRPS-0800028-0810100014[1].pdf 7. Link to PER 8. PER 2008-0189 CCA Final.doc 9. Response to PER 2008-189.7.msg 10. Tank Farms Orientation 350761 (2).pdf

COMMENTS

Poster	Reynolds, Tammy R (Skaggs, Kristi) - 03/13/2009 0951
	Completed

Task# WRPS-PER-2008-0189.7

	The AOP did not require any changes, but instead the training was revised to incorporate more information from the AOP. See attached 2 pdf files from the Training department as objective evidence of closure. This action can be closed. ks for tr		
Poster	Gaydosh, William L (Bowman, Tami A) - 03/13/2009 1053		
	Concur		
	Closure documentation attached in Estars. Bowman 03/13/09		
Poster	^PER CAs (Steelman, Tracy L) - 03/13/2009 1141		
	CLOSED		
	The PAAA Coordinator approved closure of this corrective action. tls 3/13/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

From: Anderson, Craig E
Sent: Friday, March 13, 2009 10:51 AM
To: Reynolds, Tammy R; Steelman, Tracy L
Cc: Skaggs, Kristi A
Subject: RE: Response to PER 2008-189.7

The following has been amended to state .7 and .8.

From: Anderson, Craig E
Sent: Friday, March 13, 2009 10:48 AM
To: Reynolds, Tammy R; Steelman, Tracy L
Cc: Skaggs, Kristi A
Subject: RE: Response to PER 2008-189.7

I have reviewed the Training Module for Course 350761, Rev. 0802.1 and with this statement from Tammy that no changes to AOP-020 are required as a result of the crane events as described in the Common Cause Analysis, closing of ESTARS Tasks 2008-0189 .7 and .8 is acceptable to PAAA.

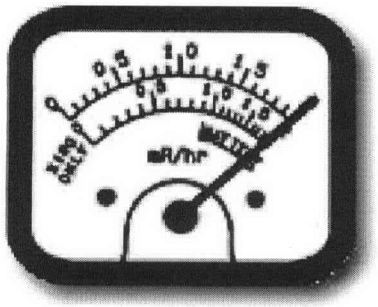
Craig Anderson

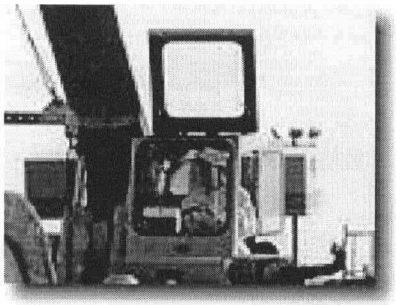
From: Reynolds, Tammy R
Sent: Friday, March 13, 2009 10:19 AM
To: Steelman, Tracy L; Anderson, Craig E
Cc: Skaggs, Kristi A
Subject: Response to PER 2008-189.7

A review of AOP-020, Response for Placing Personnel and Equipment in a Safe Condition was performed and it was determined that no changes were required to the AOP. The entry conditions, as currently written are clear. However, the training material for the AOP is being revised to more clearly describe the content, including the entry conditions.

Placing Personnel and Equipment in a Safe Condition

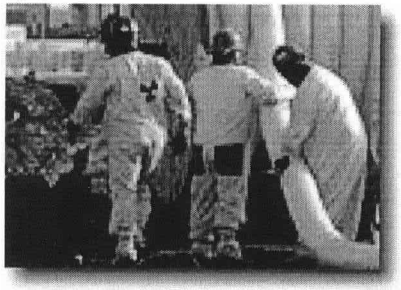
The Abnormal Operating Procedure for placing personnel and equipment in a safe condition describes the following: (roll over the pictures below for more information)





Initial Actions

Follow-Up Actions



Recovery

Entry Conditions:

- Notification by First Line Manager (FLM) of exceeding void limit of Radiological Work Permit.
- Work outside of approved work scope; or unexpected hazards are identified.
- Notification by FLM of conditions requiring crane operator to leave crane with load still suspended.

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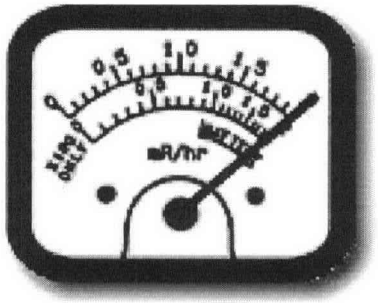
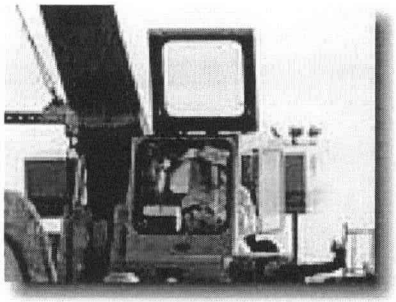
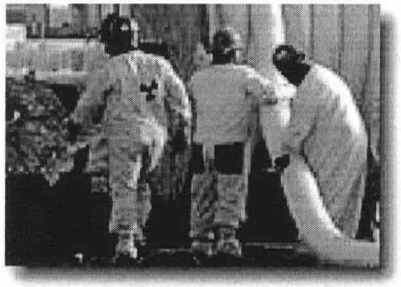


Entry Conditions



Follow-Up Actions



Recovery

Initial Actions:

- CONFIRM personnel in immediate area have been moved to safe location.

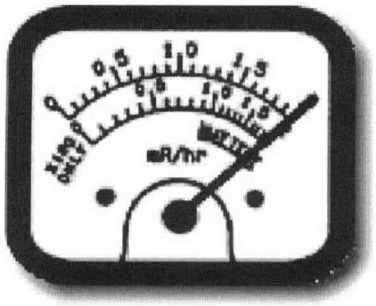
NOTE -The following is a list of some of the conditions/situations where crane operations may have to be suspended while a load is suspended from the hook:

- Unexpected dangerous radiation levels are encountered.
- Crane controls become inactive or erratic such that attempts to lower the load endanger the operator and/or personnel.
- Crane boom or load inadvertently comes into contact with power or transmission lines.
- Weather conditions deteriorate to the point that it is unsafe for the crane operator to remain in the cab of the crane.
- Any other condition where time is of the essence for the crane operator to evacuate the immediate area.

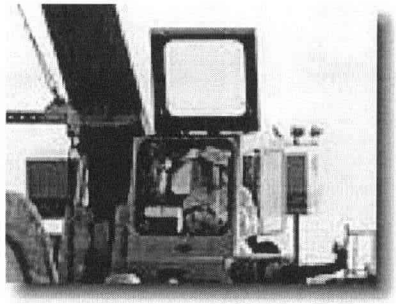
- IF crane will be left unsupervised or crane operator not in cab, PERFORM the following:
- PLACE warning signs and barriers around affected area at a minimum of at least two fully extended boom lengths from the crane.

Placing Personnel and Equipment in a Safe Condition

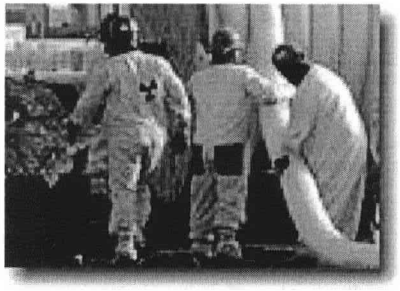
The Abnormal Operating Procedure for placing personnel and equipment in a safe condition describes the following: (roll over the pictures below for more information)



Entry Conditions



Initial Actions



Recovery

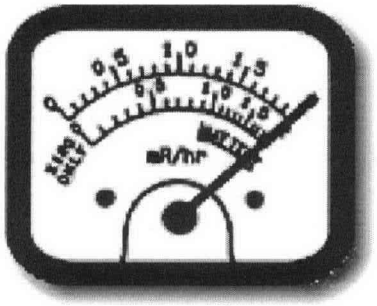
Follow-Up Actions:

- Log all actions
- Develop a path forward
- Evaluate Equipment and Systems
- Determine if any TSR's or LCO's are affected

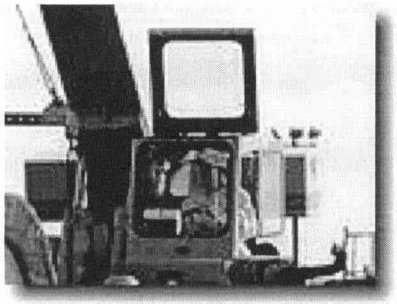
If a load is left suspended, EVALUATE equipment or system damage should suspended load falls.

Placing Personnel and Equipment in a Safe Condition

The Abnormal Operating Procedure for placing personnel and equipment in a safe condition describes the following: (roll over the pictures below for more information)



Entry Conditions



Initial Actions

Follow-Up Actions

Recovery:

- **Termination/Exit Criteria**
  - Action Plans have been implemented and the site is in a Safe Condition
  - IF required, entry into one of the Tank Farm Emergency Response Procedures

- **Restoration**
  - IF Safe Condition allows, RESTORE normal access to affected facilities.
  - RESTORE systems and components that may have been shut down or disabled.
  - IF applicable, REMOVE temporary postings, boundaries, and barriers used to control access to the affected area.
  - Generate a PER.

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INTEROFFICE MEMORANDUM

WRPS-0800028

Date: October 9, 2008

To: R. L. ~~Brown~~

From: for F. Beranek, ~~Manager~~, Environment, Health, Safety & Quality Assurance

Subject: TEAM CHARTER FOR CAUSE ANALYSIS OF CIRCUMSTANCES SURROUNDING RECENT TANK FARM CRANE OPERATIONS PROBLEM EVALUATION REQUESTS

You are assigned to lead a Root Cause Analysis team for issues identified in problem evaluation requests (PER) associated with tank farm crane operations. The cause analysis should focus primarily on the recent events related to tank farm crane operations as identified in CH2M-PER-2008-0723, 2008-0835, 2008-1091, 2008-1295, and 2008-1891. These PERs indicate tank farm crane operations are less than satisfactory and a Root Cause Analysis is needed. Specific attributes associated with human performance considerations, such as error-likely situations, error traps, and error precursors, are to be included. Specifically, your analysis should:

- Determine whether these incidents are isolated human performance events or organizational and programmatic issues.
- Determine the actual causes of the events.
- Determine the extent of condition of the causal factors.
- Determine the corrective actions needed to prevent recurrence.
- Evaluate the effectiveness of the corrective actions taken for any recurring events.

The following individuals have been assigned to the Root Cause Analysis team.

R. E. Butler	Construction and Commissioning
T. F. Kramer	Safety Specialist, Industrial Safety
T. C. Mackey	Engineer, Central Design Authority & Standards
C. A. Meldrom	Work Management and Integration, Base Operations
D. L. Morgan	Crane and Rigging, Fluor Hanford
D. P. Niebuhr	Field Work Supervisor, Base Operations
J. S. Rodriquez	HAMTC Safety Representative, Base Operations
M. J. Silvia	Specialist, Performance Assurance/Corrective Action

The performance of the analysis and final product are to be in accordance with TFC-ESHQ-Q_ADM-C-11, *Root and Common Cause Analysis and Corrective Action Planning*. Should you find you need any additional resources, please advise me immediately. Although the thoroughness of your analysis is most important, you should target your submittal date to be no later than November 3, 2008.

Brief me each week as your investigation progress.

Should you have any questions, please contact me at 372-9117.

RLB:EEW

cc: L. J. Alcala
H. S. Berman
M. N. Brosee
R. E. Butler
W. L. Gaydosh
T. F. Kramer
E. M. LaRock
K. F. Lesko
M. A. Lindholm
C. Maciuca
T. C. Mackey
C. A. Meldrom
D. L. Morgan
E. A. Nelson
D. P. Niebuhr
C. W. Peoples
J. S. Rodriquez
S. M. Sax
D. L. Shugars
M. J. Silvia
D. T. Tuckness
File

RECEIVED
OCT 10 2008
WRPS
CORRESPONDENCE CONTROL

Message

From: Reynolds, Tammy R

Sent: Friday, March 13, 2009 10:19 AM

To: Steelman, Tracy L; Anderson, Craig E

Cc: Skaggs, Kristi A

Subject: Response to PER 2008-189.7

A review of AOP-020, Response for Placing Personnel and Equipment in a Safe Condition was performed and it was determined that no changes were required to the AOP. The entry conditions, as currently written are clear. However, the training material for the AOP is being revised to more clearly describe the content, including the entry conditions.

Task# WRPS-PER-2008-0189.8

E-STARS[R] Report
Task Detail Report
07/08/2009 1449

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.8		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-07: Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020. Deliverable: Chan		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 03/13/2009
Reference	WRPS-PER-2008-0189	**Due**	03/21/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-07: Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020. Deliverable: Changes to the training that reflects changes to TF-AOP-020 as contained in CC-CA-06. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Keith, Lloyd J - Assign - Completed with comments - 03/12/2009 1551 *Instructions:* ↳ *Routing List:* herndon herndon - Inactive *Instructions:* • Herndon, Van T - Assign - Cancelled - 03/12/2009 1548	
	• Gaydosh, William L - Review - Concur with comments - 03/12/2009 1606 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. 2008-0189.7 and 8-E-Mail Re AOP 20 Revision.htm 5. Causal Team Charter WRPS-0800028-0810100014[1].pdf 6. Link to PER 7. PER 2008-0189 CCA Final.doc 8. WRPS-PER-2008-0189.8.pdf

COMMENTS

Poster	Keith, Lloyd J (Cuneo, Joseph R) - 03/12/2009 1551
	Completed
	ESTARS Num - WRPS-PER-2008-0189.8 Action - CC-CA-07: Update Tank Farms Orientation, course number 350761, to reflect modifications to TF-AOP-020.

Task# WRPS-PER-2008-0189.8

	The above action has been completed and attached as file: "WRPS-PER-2008-0189.8.pdf" to the ESTARS task.		
Poster	Gaydosh, William L - 03/12/2009 1606		
	Concur		
	I concur with the actions taken.		
Poster	^PER CAs (Steelman, Tracy L) - 03/13/2009 1057		
	CLOSED		
	The PAAA Coordinator has approved this action for closure. tls 3/13/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

From: Anderson, Craig E
Sent: Friday, March 13, 2009 10:51 AM
To: Reynolds, Tammy R; Steelman, Tracy L
Cc: Skaggs, Kristi A
Subject: RE: Response to PER 2008-189.7

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From: Anderson, Craig E
Sent: Friday, March 13, 2009 10:48 AM
To: Reynolds, Tammy R; Steelman, Tracy L
Cc: Skaggs, Kristi A
Subject: RE: Response to PER 2008-189.7

I have reviewed the Training Module for Course 350761, Rev. 0802.1 and with this statement from Tammy that no changes to AOP-020 are required as a result of the crane events as described in the Common Cause Analysis, closing of ESTARS Tasks 2008-0189 .7 and .8 is acceptable to PAAA.

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TOC Training

Tank Farms Orientation

Web Based Training Module

Course 350761

Revision 0802.1

APPROVAL SHEET

Course No.:	350761	Rev.:	0802.1
Prepared by:	VT Herndon Author	Date:	3/12/2009
Reviewed by:	See Attached email Subject Matter Expert	Date:	3/12/2009
Approved by:	LJ Keith Training Manager	Date:	3/12/09

Placing Personnel and Equipment in a Safe Condition

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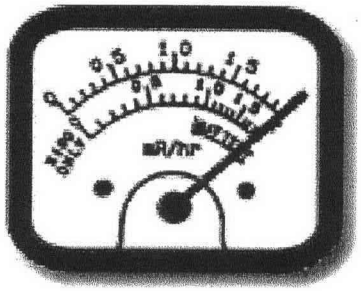

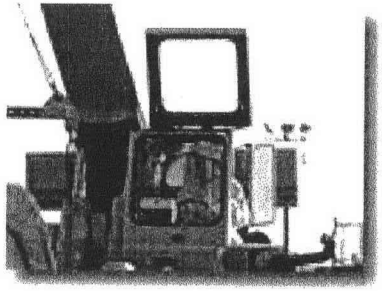

Initial Actions

Follow-Up Actions

Recovery

Entry Conditions:

- Notification by First Line Manager (FLM) of exceeding void limit of Radiological Work Permit.
- Work outside of approved work scope; or unexpected hazards are identified.
- Notification by FLM of conditions requiring crane operator to leave crane with load still suspended.

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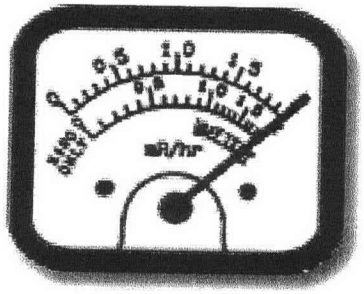
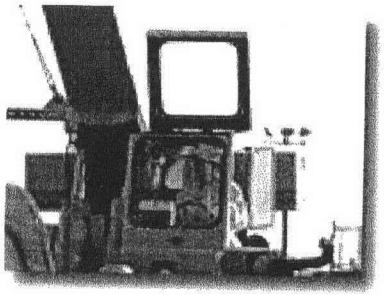
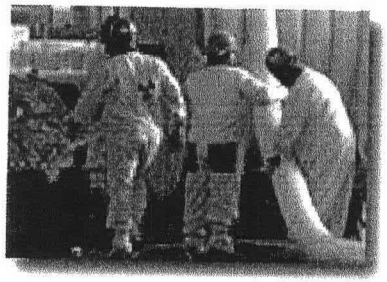


Entry Conditions



Follow-Up Actions



Recovery

Initial Actions:

- CONFIRM personnel in immediate area have been moved to safe location.

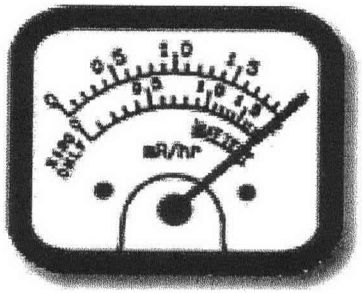
NOTE -The following is a list of some of the conditions/situations where crane operations may have to be suspended while a load is suspended from the hook:

- Unexpected dangerous radiation levels are encountered.
- Crane controls become inactive or erratic such that attempts to lower the load endanger the operator and/or personnel.
- Crane boom or load inadvertently comes into contact with power or transmission lines.
- Weather conditions deteriorate to the point that it is unsafe for the crane operator to remain in the cab of the crane.
- Any other condition where time is of the essence for the crane operator to evacuate the immediate area.

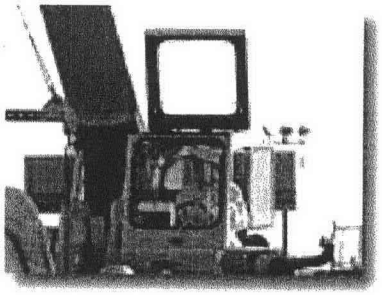
- IF crane will be left unsupervised or crane operator not in cab, PERFORM the following:
- PLACE warning signs and barriers around affected area at a minimum of at least two fully extended boom lengths from the crane.

Placing Personnel and Equipment in a Safe Condition

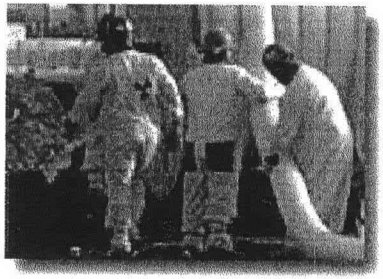
The Abnormal Operating Procedure for placing personnel and equipment in a safe condition describes the following: (roll over the pictures below for more information)



Entry Conditions



Initial Actions



Recovery

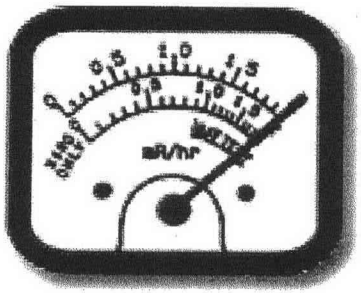
Follow-Up Actions:

- Log all actions
- Develop a path forward
- Evaluate Equipment and Systems
- Determine if any TSR's or LCO's are affected

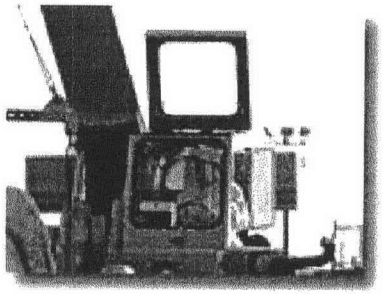
If a load is left suspended, EVALUATE equipment or system damage should suspended load falls.

Placing Personnel and Equipment in a Safe Condition

The Abnormal Operating Procedure for placing personnel and equipment in a safe condition describes the following: (roll over the pictures below for more information)

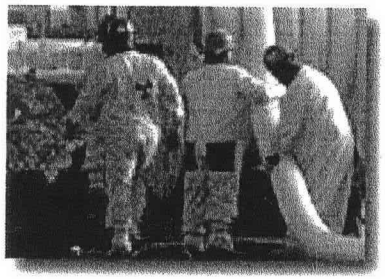


Entry Conditions



Initial Actions

Follow-Up Actions



Recovery:

- **Termination/Exit Criteria**
  - Action Plans have been implemented and the site is in a Safe Condition
  - IF required, entry into one of the Tank Farm Emergency Response Procedures

- **Restoration**
  - IF Safe Condition allows, RESTORE normal access to affected facilities.
  - RESTORE systems and components that may have been shut down or disabled.
  - IF applicable, REMOVE temporary postings, boundaries, and barriers used to control access to the affected area.
  - Generate a PER.

Herndon, Van T

From: Reynolds, Tammy R
Sent: Thursday, March 12, 2009 1:15 PM
To: Herndon, Van T; Keith, Lloyd J
Subject: RE: Placing in a Safe Place

Looks good! Thanks for keeping me out of trouble.

From: Herndon, Van T
Sent: Thursday, March 12, 2009 12:59 PM
To: Keith, Lloyd J; Reynolds, Tammy R
Cc: Herndon, Van T
Subject: Placing in a Safe Place

See attached.

VAN T HERNDON
TFC TRAINING
509-376-1763

Task# WRPS-PER-2008-0189.9

E-STARS[R] Report
Task Detail Report
07/08/2009 1403

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.9		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-08: Provide and document briefings for FWS, SSW, and Shift Manager qualified staff on changes made to TF-AOP-020, Resp		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 04/09/2009
Reference	WRPS-PER-2008-0189	**Due**	04/21/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-08: Provide and document briefings for FWS, SSW, and Shift Manager qualified staff on changes made to TF-AOP-020, Response for Placing Personnel and Equipment in a Safe Condition. Deliverable: Rosters showing completion of briefings for affected workers. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Reynolds, Tammy R - Assign - Completed with comments - 04/09/2009 0910 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 04/09/2009 1032 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	Reynolds, Tammy R - 04/09/2009 0910
	Completed
	A review of AOP-020, Response for Placing Personnel and Equipment in a Safe Condition was performed and determined the content of the AOP was satisfactory. No changes are being made to the AOP. The training department will update their training plan for this AOP with additional detail from the existing AOP. Since no changes to AOP-020 were required, no briefings were necessary. This action in the PER can be closed.
Poster	Gaydosh, William L (Bowman, Tami A) - 04/09/2009 1032

Task# WRPS-PER-2008-0189.9			
	Concur		
	No changes needed, concur. Bowman 04/09/09		
Poster	^PER CAs (Steelman, Tracy L) - 04/09/2009 1050		
	CLOSED		
	The PAAA Coordinator reviewed and approved the task for closure. tls 4/9/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	04/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0189.10

E-STARS[R] Report
Task Detail Report
07/08/2009 1403

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.10		
Subject	WRPS-PER-2008-0189; Sig; CC-CA-09: Modify TFC-ESHQ-Q_C-C-01, Problem Evaluation Request, section 4.		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 04/08/2009
Reference	WRPS-PER-2008-0189	**Due**	04/17/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CC-CA-09: Modify TFC-ESHQ-Q_C-C-01, Problem Evaluation Request, section 4.3, Screen PERs to include identifying a SMPS owner ad identified in TFC-PLN-32, Tank Operations Contractor Safety Management Programs. For PERs with Resolution and Significant PERs, include the SMP owner or other staff identifed by SMP owner in the routing of the PER. Deliverable: A modification to TFC-ESHQ-Q_C-C-01, Problem Evaluation Request, section 4.3, Screen PERs to inlcude identifying a SMP owner as identified in TFC-PLN-32, Tank Operations Contractor Safety Management Programs. For PERs with Resolution and Signficant PERs include the SMP owner or other staff identified by SMP owner in the routing of the PER. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Maciuca, Tino - Assign - Completed with comments - 03/27/2009 1441 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 04/07/2009 1124 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. TFC-ESHQ-Q_C-C-01,_Problem_Evaluation_Request.doc

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L) - 03/10/2009 0905
	Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed.
Poster	^PER CAs (Steelman, Tracy L) - 03/10/2009 0911

Task# WRPS-PER-2008-0189.10

	Approved due date extension to 4/10/09. tls 3/10/09		
	Extension Justification: Procedure TFC-ESHQ-Q_C-C-01 is undergoing a major revision to incorporate suggestions for process improvement, including the identification of SMP owners. The estimated date for the issuance of the revised procedure is 4/3/09. The extension was approved by C. Anderson, PAAA Coordinator, and F. Beranek, ESRB Sponsor. tls 3/10/09		
Poster	Maciuca, Tino - 03/27/2009 1441		
	Completed		
	Procedure TFC-ESHQ-Q_C-C-01 was revised to include identifying a SMP owner as indicated in TFC-PLN-32.		
Poster	Gaydosh, William L - 04/07/2009 1124		
	Concur		
	I concur with the actions taken. B. Gaydosh 4.7.09		
Poster	^PER CAs (Steelman, Tracy L) - 04/08/2009 1434		
	CLOSED		
	Approved to close by the PAAA Coordinator. tls 4/8/09		
TASK DUE DATE HISTORY			
Modified	03/10/2009 0906 - ^PER Coordinator	**New Due Date**	04/10/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1, 7.1.2)

This procedure establishes the requirements and responsibilities for the timely identification and evaluation of conditions adverse to quality, safety, health, operability, and the environment using the Problem Evaluation Request (PER) process. This procedure is applicable to personnel initiating a PER and those individuals/groups involved in the processing of PERs to closure. (7.1.1, 7.1.2)

The PER process ensures that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, abnormal occurrences, and nonconformance issues are promptly identified and corrected. The PER process also trends PAAA/WSH compliance by identifying safety and quality noncompliances with 10CFR830, 10CFR830, Subparts A and B, 10CFR835 and 10CFR851. The PER process also provides a means for requesting clarification of requirements, evaluating performance improvement suggestions, and lessons learned reports, including initiation and tracking of any actions taken. A PER shall be initiated for conditions that require resolution, trending, cause determination, or identification and tracking of corrective actions. (7.1.1, 7.1.2)

The PER process also ensures the adequate documentation and tracking of the concern or problem and corrective actions via the Electronic Suspense Tracking and Routing System (E-STARS) web-based tool. (7.1.2)

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

3.1 Performance Assurance/Corrective Action Manager

Facilitates consistent implementation of the PER process throughout Washington River Protection Solutions, LLC (WRPS).

Supports technical review of extent of conditions, corrective actions, and causal analysis of all PER with Resolution (i.e. resolution and closure) by way of the Independent Assessment review function.

Determines performance indicators, recommends company-level performance indicators, and identifies action levels or goals for performance indicators.

3.2 Managers

Implement the PER program through properly informing and training of employees. The training requirements for a Responsible Manager or delegate to resolve PERs are as follows:

- Tools for Corrective Action Management (357018) (process overview for management)
- Corrective Action Management/E-STARS (357014) (software, process and program details and requirements for day-to-day users)
- Apparent Cause Analysis (357011) (for PERs with resolution) (not required if 357010 has been completed)
- Advanced Root Cause Analysis and Common Cause (357010) (for significant PERs).

NOTE: The term "Responsible Manager" denotes the person assigned to resolve the PER; the title Manager on the organization chart is not required to be a Responsible Manager.

3.3 PER Originators

- Identify the issues entered into the PER system in accordance with Section 4.1 of this procedure.
- Share responsibility, along with the Responsible Manager, for PER-related communication and feedback requirements.

4.0 PROCEDURE

Performance of this procedure may be limited to the performance of an individual section.

Figure 1 provides a process flowchart of the major process steps.

4.1 Problem Evaluation Request Initiation
(7.1.1, 7.1.2)

A PER shall be initiated for conditions that require resolution, trending, cause determination, or identification and tracking of corrective actions.

Notify Shift Operations immediately (373-2689) if the problem/concern is an emergency, involves immediate safety issues, or involves one of the following subjects:

- Personnel injury, if not previously reported
- Safety basis compliance issues
- Potential inadequacies in the safety basis (PISA)
- Loss/theft of radioactive material where exposure in an unrestricted area could result (including radioactive sources)
- Personnel radiation or hazardous material exposure that exceeds the limits or has potential to exceed limits
- Contamination or radiation levels in excess of the current posting
- Environmental compliance issues
- Environmental impacts beyond those allowed by laws, regulations, permits and agreements
- Non-compliances with operating specification documents
- Discrepancies associated with drawings or labeling which may affect in-process or active work
- Nuclear criticality safety issues

- Events that prevent taking protective actions to avoid unallowable releases or exposures
- Events requiring notification to government agencies other than DOE
- Transportation accidents involving radioactive or hazardous material
- Any event that may be reportable per TFC-OPS-OPER-C-24
- Receipt of internal or external safety-related operating experience information requiring action on the part of WRPS.

A problem, finding, or concern identified by an external agency (e.g., U.S. Department of Energy (DOE), Washington State Department of Ecology, OSHA, etc.) shall be recorded on a PER by the individual receiving the notification/out-brief as soon as practical. The PER should be written to ensure the following information is captured to assist in developing a formal response:

- Name of DOE Facility Representative/ORP Safety System Oversight (SSO) or external authority identifying or responsible for accepting resolution of the issue.
- Surveillance/Assessment number, if available.

DO NOT initiate a PER for the following:

- Positive observations
- Confidential concerns including: employee concerns, bargaining unit agreement items, sensitive medical matters or dosimetry/bioassay results
- Items or discussions classified as Official Use Only
- Minor problems, such as: housekeeping and general facility maintenance and repairs. For general facility issues, call the facility maintenance hot line (373-HELP or 373-4357) or send an e-mail to mailbox ^WRPS Facilities Help Desk.

DO NOT include the following in a PER:

- Employee names in the Description of Concern or Problem, except as specified for DOE externally identified issues. Use job titles to denote individuals.
- Multiple issues/concerns types in a single PER. Generate a separate PER for each issue/concern type.

NOTE: Issues/concerns that span multiple organizations will be assigned to one of the organizations to lead the resolution for all organizations.

PER Originator

1. At a computer terminal, select the PER icon on the screen. If no icon is present, perform the following:

   a. Go to the Hanford Intranet (http://www.rl.gov/).

b. Under the Hanford Intranet section, click on Washington River Protection Solutions, LLC. Click on General Information; select PER.

NOTE: If the PER database is not accessible, the Problem Evaluation Request (PER) Worksheet, A-6003-130, is available electronically via Hanford Site Forms. The form can be printed out as a hard copy for use by PER originators as a preliminary worksheet prior to entering data in the PER database, once it becomes accessible.

2. Enter data in the fields on the PER Originator screen.

NOTE: The PER system automatically enters the Hanford Identification (HID) number, phone number, and name of the person logged on to the Hanford Intranet while the PER is initiated. If the name of the person appearing on the Originator tab is not the originator, click on the Ellipse button, enter the correct name, and click on search. Verify the correct name is displayed.

3. Click the "Submit" button. Activating the "Submit" button will enter the PER into the E-STARS tracking system. The PER will be routed via E-STARS to Shift Operations for screening.

4. On the next screen, when PER initiation confirmation screen is displayed, attach source document and supporting electronic documentation as read-only files, as applicable.

NOTE (1): See Table 1 for examples of acceptable file formats and file naming conventions.

NOTE (2): The PER system sends e-mail notification to the PER originator listing the PER number for future reference. Use the PER number provided to contact the Responsible Manager for follow-up as needed.

Originator's Manager

5. Upon receipt of e-mail notification, review the PER to ensure the PER adequately describes the event or concern(s) and does not contain personnel names (except DOE Facility Representative/ORP SSO) or other sensitive information.

6. If PER content needs editing/correction, direct the originator to contact the Corrective Action Group to initiate needed changes.

4.2 Shift Operations Screening

Shift Operations screening may be performed by any shift manager or delegate who has access to the E-STARS Shift Operations (SO) To Do box and the PER tab. The Shift Operations screening should be performed within 24 hours of initiation.

NOTE: The 24-hour desired review time can be exceeded if reportability, operability, or nuclear safety data is not available or is in process.

Shift Operations

1. Review the PER Originator screen.

2. Populate the fields on the PER SO screen:

   a. Differentiate between items self-identified prior to an event vs. self-identified as a result of an event (see definition of event).

   b. Mark all issues identified by other than WRPS as "external" or "DOE facility representative," as applicable.

3. Attach supporting electronic documentation to E-STAR task as read-only files, as applicable.

   NOTE: See Table 1 for examples of acceptable file formats and file naming conventions.

4. Click the "Submit" button on the PER.

5. Select "Concur" on the E-STARS task to route the PER to the PER screening team for review.

4.3 PER Screening Team
(7.1.2)

The quorum for the PER screening team consists of a representative from Corrective Action Management Group (Chairperson), PAAA, and Operations. The screening team cannot proceed if a quorum has not been achieved.

Knowledgeable representatives from other organizations may participate in the screening process as deemed necessary by the issues described in the PERs to be screened.

The Screening Team Chair shall provide clarification statements (screening comments) regarding the initial PER significance determination and changes in significance level requested by Responsible Managers prior to launching the PER.

The Performance Assurance and Corrective Action Manager shall review the results of the screening activities. The results of the screening activities should reflect an objective evaluation of the problem or concern described in the PER.

These process steps provide guidance for the team to screen the PER for significance level, assign Responsible Manager for resolution, identify duplicate issues, determine invalid PERs and establish trend codes.

NOTE: For re-screening process steps, see Section 4.5.1.

PER Screening Team

1. Prior to the PER screening meeting, review the PER screening batch report, which includes:

   - New PERs
   - Re-screen requests
   - Roll-up requests.

   a. If the PER has been determined to be reportable by Shift Operations, enter the Occurrence Report number in the Occurrence Report Number field, if available.

   b. Refer to Table 2 for guidance when assigning significance category.

2. Review each PER and the immediate actions and compensatory measures implemented to date.

3. If unable to obtain sufficient information to screen the PER (see Table 2):

   a. Select Further Evaluation as the significance level.

   b. Assign a Responsible Manager to perform the further evaluation.

   c. Enter specific instructions in order to obtain sufficient information from the evaluation.

4. If the PER documents/represents a PISA condition:

   a. Document that a PISA condition is represented at the top of the Description of Concern or Problem.

   b. Screen the PER as a Further Evaluation.

   c. Include in the screening comments the following instructions: "Complete a USQD and provide the determination results."

5. If duplicate PERs are found:

   a. Identify the original PER by PER number in the screening comments of the duplicate PER(s).

   b. Include the duplicate PER number(s) in the original PER screening comments.

   c. Assign Invalid significance to the duplicate PER(s).

6. If the PER documents an ORP Facility Representative/ORP Safety System Oversight (Fac Rep/SSO) finding, identify the Fac Rep/SSO contact and initiate the Fac Rep/SSO Review Role.

7. If the PER documents an issue identified in an Independent Assessment Report, a Tri-Annual Assessment Report or other PERs as identified by the Screening team; initiate the IA Review Role.

8. At the screening meeting, discuss and concur on the following PER field choices:
   - Significance level
   - Assigned Responsible Manager
   - PER screening comments

9. If the PER is screened a PER with Resolution, determine the level of rigor required for the Apparent Cause Analysis (formal or informal) based on the relative significance of the problem and document the determination in the screening comments. Examples include:

   - Informal Apparent Cause Analysis: Isolated minor non-compliances with no ESH&Q programmatic or mission impact. Simple, unambiguous events with well understood issues. Procedural non-compliances that do not adversely affect the outcome of the process.

   - Formal Apparent Cause Analysis: Occurrence Reports greater than SC-4. 10CFR851 NTS reportable issues meeting the following ORPS reporting criteria:

     - Personnel exposure greater than limits with consequence where no special medical surveillance program is required for affected personnel. 2A(5) SC-3.

     - Unplanned fire/explosion in a non-nuclear facility reported only because a facility evacuation (i.e., a disruption to normal operations) resulted. 2B(3) SC-3.

     - Process failure/discovery of uncontrolled energy source. 2C(2) SC3

     - Near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. 10(3) SC3 or SC4

10. If the PER is rated a Significant PER, notify the Executive Safety Review Board (ESRB) secretary immediately following the screening meeting.

11. If the PER is associated with a Safety Management Program (SMP), identify the SMP. For PERs with Resolution and Significant PERs, choose the associated SMP Owner as identified in TFC-PLN-32, *Tank Operations Contractor Safety Management Programs,* to review the PER.

Screening Team Chairperson

12. If the PER is rated Invalid, notify the originator.

4.4 Responsible Manager Review

Responsible Manager or Delegate

1. Review screening results in the Responsible Manager batch report for the following, identify changes:

   - Significance Level
   - Responsible Manager

2. Send an e-mail to ^WRPS Corrective Action Group mail box requesting changes to significance level and/or Responsible Manager.

Corrective Action Group

3. Process requested changes to significance level and/or Responsible Manager back to the PER Screening Team for review and consideration.

4. Route the PERs without comments to the Responsible Manager via E-STARS.

   NOTE: The PER system sends an e-mail message to the originator notifying him/her that the PER was processed and has been assigned a Responsible Manager and significance level.

4.5 Problem Evaluation Request Resolution and Closure Process (7.1.2)

Corrective action implementation and closure should be completed within 180 days of the PER initiation or re-screen of significance level. When all corrective actions are verified complete, the PER is closed.

4.5.1 PER Re-Screen Process

Refer to Table 2 for PER significance levels and a description of each level.

Responsible Manager

1. If a change in significance level is justified (in accordance with Table 2), return the E-STARS task with justification comments to the Corrective Action Group by selecting the E-STARS response "Decline" and entering justification for re-screening in the comment window. Examples include:

   - Occurrence Reports that have been re-categorized
   - PERs determined to be of greater or lesser significance based on initial investigation
   - Roll-up candidates (see Section 4.5.3).

   NOTE: For change of PER ownership (transfer) see Section 4.5.2.

Corrective Action Group	2.	Document re-screen request justification in the PER Screening Comments section and route the PER to the PER screening team via E-STARS for review.

4.5.2 PER/E-STARS Extension, Transfer, and/or Revision Process

NOTE: Further Evaluation PERs are not normally granted due date extensions. PISA-related Further Evaluations can be extended beyond the 7-day limitation to allow for the completion of the USQD.

Responsible Manager

1. For revisions to all PERs, except Significant PERs, send an email to request a due date extension, transfer or change to the ^WRPS Corrective Action Group mail box.

   NOTE (1): Extensions to PERs with Resolution issues that have not been resolved within 45 days requires the approval of the Performance Assurance/Corrective Action Manager.

   NOTE (2): Due dates on PERs associated with deficiencies resulting from external assessments (facility representatives surveillances, DOE assessments, etc.) can be extended only after coordination with the external agency.

   a. For extension, include new due date and justification for change.

   b. For transfers, include relinquishing and accepting Responsible Managers in cc: distribution.

   c. For text changes to corrective actions addressing Occurrence Report PERs SC-2 or higher, obtain DOE facility representative approval.

   d. Communicate any changes made to Occurrence Report-related PERs to the WRPS Occurrence Reporting representative.

2. For a Significant PER, complete the SPER/Corrective Action/End Point Assessment Extension/Change/Transfer Request (A-6003-543) and submit to ESRB Secretary.

ESRB Secretary

3. Obtain approval from the ESRB sponsor.

4. If there are PAAA issues, obtain approval of the PAAA Coordinator on form A-6003-543.

4.5.3 Roll-Up Process

The purpose of the roll-up process is to allow PERs with similar concerns or problems to be consolidated and tracked by rolling up to one host PER. The roll-up process is also used to track multiple sub-tier PERs rolled up into a Significant PER where the root cause analysis and the corrective action plan clearly address each sub-tier issue.

The host PER must be a significance level equal to, or greater than, the sub-tier PER(s) and, when completed, all sub-tier issues must be addressed. A roll-up to a closed PER is prohibited. Sub-tier PERs will be downgraded to Trend Only and closed.

The host PER's Responsible Manager is required to resolve the specific issues identified by the roll-up PER(s) in the resolution and corrective actions of the host PER in accordance with TFC-ESHQ-Q_ADM-C-11 or TFC-ESHQ-Q_ADM-C-12.

Responsible Manager

1. To roll-up a PER, perform the following:

   a. Identify the host PER.

   b. Gain concurrence with the Responsible Manager of the host PER to accept the roll-up PER and attach documentation of concurrence to the host PER.

   c. If the roll-up indicates that an increased level of reportability may be required, contact Shift Operations for review. If reportability change is required, process host PER for rescreening (Section 4.5.1).

      NOTE: If a PER documents a Fac Rep/SSO finding, resulted from an Independent Assessment, or documents a PAAA reportable issue, then that PER must be the host PER.

   d. Ensure sub-tier PERs problem(s) and concern(s) align with the host PER.

      1) Complete PER Integration Table 3.

      2) Attach the table electronically to the host PER and sub-tier PER's E-STARS task as a read only file.

      3) If a change to the significance level of the host PER, is needed, select "Decline" on the E-STARS task and enter comments to indicate the justification for significance level change.

      4) To downgrade sub-tier PERs, select "Decline" on the E-STARS task and enter comments to indicate the justification for roll-up to host PER and downgrade to Trend Only.

4.5.4 Further Evaluation PERs

Further Evaluation PERs are designated for conditions that require additional information or special evaluation to adequately support the screening of PER significance level or Responsible Manager assignment determination (see Table 2).

Individuals assigned Further Evaluation PERs will provide the requested information back to the PER screening team for re-screening within seven calendar review days of assignment.

NOTE: PISA-related Further Evaluations may be extended beyond the seven-day limitation to allow for the completion of the USQD.

Responsible Manager or Delegate

1. Review the PER and associated screening comments for requested information.
2. Attach supporting electronic documentation, as applicable.

   NOTE: Attach available electronic documentation to the PER as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

3. Select "Complete" on the E-STARs task and provide the evaluation information in the "Response/Completed" E-STARS comment window; select "Finish" to complete the E-STARS task. This will return the task to the Corrective Action Group.

PER Screening Team

4. Complete the screening process in accordance with Section 4.3.

4.5.5 Trend Only PERs

Trend Only PERs require no resolution and will be closed upon Responsible Manager review and concurrence. An information only e-mail will be sent automatically to the Responsible Manager and PER originator when the PER is closed.

4.5.6 Track Until Fixed

Actions required for Track Until Fixed (TUF) PERs should be completed within 120 days of initiation, re-screen to TUF, or reassignment. The guidance criteria for a TUF are provided in Table 2.

Responsible Manager or Delegate

1. Review the PER to ensure the identified issue is understood prior to evaluation.

   a. If requested, involve the PER originator as identified in the originator section of the PER.

2. If requesting a PER significance level change (for guidance criteria see Table 2), perform the following in E-STARS:

   a. Select "Decline" in E-STARS.

   b. Provide justification for decline in E-STARS comment

window. See Section 4.5.1. This action will route the E-STARS task back to the Corrective Action Group for re-screening by the PER screening team.

3. Describe the actions taken to fix the problem in the Action Taken field on the PER TUF tab. If upon review it is determined the issue will not be addressed and it does not reflect a violation of procedure or requirement, or a safety hazard; provide the justification for closure without action in the Action Taken field on the PER TUF tab.

4. Attach supporting electronic documentation, as applicable.

   NOTE: Attach available electronic completion documentation to the E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

5. When the resolution is complete, Submit the PER.

6. If requested, communicate the action taken to the PER originator, as identified in the originator section of the PER.

7. Complete the E-STARS task with a completion statement. The completion statement shall include actions taken and document communication with the originator.

Corrective Action Group

8. Close the E-STARS task with a closure statement. The PER will close automatically.

   NOTE: The PER system sends e-mail notification to the originator that the PER is closed.

4.5.7 Performance Improvement Evaluation/Continuous Improvement Management Initiative PERs (PIE/CIM)

The PIE/CIM is designed to encourage employees to plan, develop, explore, and implement new ideas for improving products, processes, and services. The guidance criteria for a PIE/CIM are provided in Table 2.

Resolution of PIE/CIM PERs should be dispositioned within 60 days of the PER initiation, re-screen to PIE/CIM, or reassignment.

Responsible Manager or Delegate

1. Review to ensure the identified issue is understood prior to evaluation.

2. If requested, involve the PER originator as identified in the originator section of the PER.

3. If requesting PER significance level change, perform the following in E-STARS:

   a. Select "Decline" in E-STARS.

b. Provide justification for decline in E-STARS comment field. See Section 4.5.1. This action will route the E-STARS task back to the Corrective Action Group for re-screening by the PER screening team

4. Enter the evaluation data, including any corrective actions taken, into the Evaluation of PIE/CIM Initiative field in the PIE/CIM tab of the PER.

5. If needed, initiate corrective action(s) to address the suggestion(s) accepted. Include a detailed action statement and identify evidence documentation needed for closure.

6. If the evaluation is acceptable without launching corrective actions, attach supporting electronic completion documentation, as needed, to the E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

7. When the evaluation is complete, Submit the PER.

8. If requested, communicate the evaluation results to the PER originator, as indicated in the originator section of the PER.

9. Complete the E-STARS task with a completion statement, including actions taken and documenting communication with the originator.

Corrective Action Group

10. If the PIE/CIM does not include corrective actions, close the E-STARS task with a closure statement. The PER will close automatically.

11. If the PIE/CIM includes corrective actions, launch the corrective actions in E-STARS.

Actionee or Delegate

12. Implement the corrective action(s).

    NOTE: The actionee may delegate corrective action items; however, the original actionee is ultimately responsible for delegating in a timely fashion to allow for completion of the corrective action on or before the due date.

13. Attach electronic data supporting completion of the actions to the E-STARS task as applicable. Complete the E-STARS task with a completion comment providing a description of actions taken and detailed supporting information in the E-STARS comment window.

    Examples of electronic attachments (not hyperlinks) for completion documentation:

    - Released red-lined procedure file
    - Training attendance (attach ITEM or roster)
    - Required Reading (attach web print or roster)
    - Drawing changes (attach ECN)
    - Other closure documentation, including, but not limited to,

e-mail, memos, letters, photographs.

NOTE (1): Forms attached as completion documentation must have all fields completed, including the signature block. "Signature on file" may be used in lieu of original signature.

NOTE (2): Attach available electronic completion documentation to the PER as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

Responsible Manager or Delegate

14. Review the corrective action completion statement and attachments. Ensure all delegation lists have been closed. "Concur" in E-STARS with comments.

Independent Assessment

15. Review corrective action completion, when required.

    a. If the completion is not acceptable, click the Return to Rework button to route the E-STARS task back to the actionee, with comments justifying/supporting the request for additional information/action.

    b. If the completion is acceptable, perform the following.

        1) Attach any supporting documentation to the E-STARS task.

        2) Concur with the corrective action by selecting "concur" on the E-STARS task with comments.

NOTE: Attach available electronic completion documentation to the E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

Responsible Manager or Delegate

16. If returned for rework, verify changes are implemented.

17. Ensure electronic files used for documentation of action completion are attached to the E-STARS task. Attach supporting electronic documentation, as applicable. See Table 1 for examples of acceptable file formats and file naming conventions.

18. "Complete' the Return for Rework corrective action E-STARS task with a completion statement detailing actions taken.

Independent Assessment

19. Review reworked action completion, when required; 'concur with the reworked action by selecting "concur" on the E-STARS task with comments.

Corrective Action Group

20. Review corrective action completion statement and verify completion documentation attachments; close the corrective action E-STARS task.

21. When all corrective action tasks associated to the PER are complete, close the PER.

NOTE: The PER system sends e-mail notification to the originator when the PER is closed.

4.5.8 PERs with Resolution

Resolution of PERs with Resolution (i.e. completion of extent of condition, and causal analysis and initiation of corrective actions) should be completed within 45 days of the PER initiation, re-screen to PER with Resolution, or reassignment. The guidance criteria for PER with Resolution are provided in Table 2.

Responsible Manager or Delegate

1. Review the PER to ensure the identified issue is understood prior to resolution.

   a. If requested, involve the PER originator as identified in the originator section of the PER.

2. If requesting PER significance change, perform the following in E-STARS.

   a. Select "Decline" in E-STARS.

   b. Provide justification for decline in the E-STARS comment window. See Section 4.5.1. This action will route the E-STARS task back to the Corrective Action Group for re-screening by the PER screening team.

   NOTE: The Responsible Manager may designate someone with E-STARS "act as" authority to resolve the PER and sub-task, or delegate action items to an actionee.

3. Perform apparent cause analysis and corrective action planning in accordance with screening team's graded approach determination.

   When an informal apparent cause analysis is recommended, perform the apparent cause analysis and enter the conclusions in the causal analysis section of the PER. Formal documentation is not required for an informal analysis. Perform corrective action planning in accordance with TFC-ESHQ-Q_ADM-C-12.

   When a formal apparent cause analysis is required, perform the apparent cause analysis and corrective action planning in accordance with TFC-ESHQ-Q_ADM-C-12.

   a. Populate the fields on the Causal Analysis screen.

4. Attach applicable electronic resolution documentation to E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

   a. Ensure resolution documentation includes causal charts, investigation notes, and documentation supporting apparent cause analysis and remedial actions, if any.

   b. If the event described in the PER resulted in a Fact Finding or an event investigation team (EIT) activation, ensure an electronic file of the Fact Finding or EIT final report is included in the resolution documentation.

5. When the resolution is complete Submit the PER.

6. Communicate the resolution to the PER originator as identified in the originator section of the PER.

7. Ensure all sub-tasks and delegation lists have been closed.

8. Electronically attach all documentation, including source documents and proof of action taken, to the E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions.

   NOTE: Resolution documentation should include causal charts, investigation notes, and documentation supporting apparent cause analysis. If the event described in the PER resulted in an EIT activation or a Fact Finding, ensure an electronic file of the EIT or Fact Finding final report is included in the resolution documentation.

   Examples of electronic attachments (not hyperlinks) for completion documentation:

   - Released red-lined procedure file
   - Training attendance (attach ITEM or roster)
   - Required Reading (attach web print or roster)
   - Drawing changes (attach ECN)
   - Other closure documentation, including, but not limited to, e-mail, memos, letters, photographs.

9. "Complete" E-STARS task with a completion statement summarizing actions taken and documenting the communication with the originator.

Independent Assessment	10.	Perform a technical review of the resolution. a. If the resolution is not acceptable, click the Return for Rework button to route the E-STARS task back to the Responsible Manager, with comments justifying/supporting the request for additional information/action. b. If the resolution is acceptable, perform the following. 1) Attach applicable electronic supporting documentation to E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions. 2) Concur with the PER resolution package by selecting "Concur" on the E-STARS task with comments.
Responsible Manager or Delegate	11.	If returned for rework, verify changes are entered on the PER, "Submit" the PER.
	12.	Ensure all sub-tasks and delegation lists have been closed.
	13.	Electronically attach all documentation, including source documents and proof of action taken, to the E-STARS task as a Read Only file. See Table 1 for examples of acceptable file formats and file naming conventions. NOTE: Resolution documentation should include causal charts, investigation notes, and documentation supporting apparent cause analysis. If the event described in the PER resulted in an EIT activation or a Fact Finding, ensure an electronic file of the EIT or Fact Finding final report is included in the resolution documentation.
	14.	"Complete" the E-STARS task with completion statement summarizing actions taken.
Independent Assessment	15.	Review reworked action completion, when required; "concur" with the reworked action completion the E-STARS task with comments.
Corrective Action Group	16.	Review submitted resolution and electronic attachments, if any.
	17.	If the resolution is not acceptable, click on the Return to Rework button to route the E-STARS task back to the Responsible Manager with comments requesting additional information/clarification.
	18.	If the resolution is acceptable, launch the corrective actions.

	19.	If no corrective action is identified, close the E-STARS task, which will close the PER. NOTE: The PER system sends e-mail notification to the originator that the PER is closed.
Corrective Action Assignee or Delegate	20.	Implement corrective action(s). NOTE: The actionee may delegate corrective action items; however, the original actionee is responsible for delegating in a timely fashion to allow for completion of the corrective action on or before the due date.
	21.	Attach electronic data supporting completion of the actions to the E-STARS task as a read-only file. Examples of electronic attachments for completion documentation: • Red-lined released procedure revision. • Training attendance, attach ITEM or roster • Required Reading, attach web print or roster • Drawing changes, attach completed ECN • Other closure documentation, including, but not limited to, e-mail, memos, letters, photographs. NOTE: Forms attached as closure documentation must have all fields completed, including the signature block. "Signature on file" may be used in lieu of original signature. See Table 1 for examples of acceptable file formats and file naming conventions.
	22.	Complete the E-STARS task and provide a detailed description of the actions taken to complete the task in the E-STARS comment field.
Responsible Manger or Delegate	23.	Review the corrective action completion statement and attachments.
	24.	For Occurrence Report related PER, verify the final Occurrence Report has been submitted to ORPS.
	25.	Ensure all delegation lists have been closed. Concur with E-STARS task, with comments.
Independent Assessment	26.	Perform a technical review of the corrective action completion. a. If the completion is not acceptable, click the Return to Rework button to route the E-STARS task back to the Responsible Manager with comments requesting

additional information/clarification.

b. If the completion is acceptable, perform the following.

1) Attach electronic supporting documentation to E-STARS task as a Read Only file, as applicable. See Table 1 for examples of acceptable file formats and file naming conventions.

2) "Concur" in E-STARS with comments.

Responsible Manager or Delegate

27. If returned for rework, verify changes are implemented.

28. Ensure electronic files used for documentation of task completion are attached to the E-STARS task. See Table 1 for examples of acceptable file formats and file naming conventions.

29. "Complete" E-STARS task with a completion statement detailing actions taken.

Independent Assessment

30. Review reworked action completion, when required; "concur" with the reworked action E-STARS task with comments.

Corrective Action Group

31. Review corrective action completion statement and verify completion documentation attachments; close corrective action E-STARS task.

32. After review and approval of all corrective actions, close the E-STARS parent task which will close the PER.

NOTE: The PER system sends e-mail notification to the originator that the PER is closed.

4.5.9 Significant PERs

Resolution of Significant PERs should be dispositioned within 30 days of the PER initiation, re-screen to Significant, or reassignment. The guidance criteria for Significant PERs are provided in Table 2.

ESRB Secretary or Delegate

1. Schedule an ESRB meeting and notify Responsible Manager of meeting date and date Root Cause Analysis/Common Cause Analysis (RCA/CCA) is due for distribution to the ESRB.

Responsible Manager or Delegate

2. Review the issue to ensure the identified issue is understood prior to resolution.

3. If requested, contact the PER originator as identified in the originator section of the PER.

NOTE: If, during the performance of the investigation or causal analysis, The need to re-screen the PER to a lower significance

level is determined, the Responsible Manager of the PER should present a request for re-screening to the ESRB at the next scheduled ESRB meeting.

4. Perform the root and common cause corrective action planning in accordance with TFC-ESHQ-Q_ADM-C-11.

5. Communicate the resolution to the PER originator by contacting the PER originator by the method identified in the originator section of the PER.

6. Present RCA/CCA to ESRB.

7. If root cause analysis and corrective action plan are approved by the ESRB, update the causal analysis and corrective actions on the PER Causal Analysis tab.

   a. Ensure electronic files are attached to the E-STARS task(s).

      NOTE: Attached files shall include the approved root cause analysis final report which includes the corrective action plan and end point assessment criteria.

   b. "Submit" completed PER electronically. Submit hardcopy approved Root Cause Analysis to the ESRB Secretary for verification approval in E-STARS.

8. If the Significant PER is NTS-related, submit an electronic copy of the Root Cause Analysis and corrective action plan to the PAAA Coordinator.

9. "Complete" the E-STARS action item.

ESRB Secretary

10. Launch in E-STARS the corrective actions from the Causal Analysis tab on the PER.

Responsible Manager or Delegate

11. Implement corrective action(s).

    NOTE: The actionee may delegate corrective action items; however, the actionee is responsible for delegating in a timely fashion to allow for completion of the corrective action on or before the due date.

12. Provide any supporting information in the E-STARS comment field and attach electronic data supporting closure of the actions to the E-STARS task.

    Examples of electronic attachments for closure documentation:

    - Red-lined released procedure
    - Training attendance, attach ITEM or roster

- Required Reading, attach web print or roster
- Drawing changes, attach completed ECN
- Work Planning, attach Operations acceptance
- Other closure documentation, including, but not limited to, e-mail, memos, letters, photographs.

NOTE: Forms attached as closure documentation must have all fields completed, including the signature block. "Signature on file" may be used in lieu of original signature.

13. For Occurrence Report-related PERs, verify the final Occurrence Report has been submitted to ORPS.

ESRB Secretary

14. Review corrective action completion statement and verify supporting documentation attachments; close the corrective action E-STARS task.

Responsible Manager

15. Upon completion of all corrective action(s), complete the end point assessment in accordance with TFC-ESHQ-Q_ADM-C-11.

    a. If the end point assessment determines unacceptable results, i.e., the problem has not been corrected or committed actions have been discontinued, discuss differences and path forward during ESRB presentation.

ESRB Secretary

    b. Add end point assessment to the ESRB meeting agenda.

        1) Notify the Responsible Manager of the presentation date.

        2) Forward copies of the end point assessment to the ESRB members.

Responsible Manager

    c. Present the results of the end point assessment to the ESRB for final approval by the ESRB chairperson and authorization to close the Significant PER.

ESRB

    d. Review the end point assessment.

        1) If the end point assessment is acceptable:

            - Attach final, signed End Point Assessment report to E-STARS task;

            - Close E-STARS task.

        2) If the end point assessment is not acceptable, provide supporting information to the Responsible Manager for resolution.

ESRB Secretary

16. Close the PER.

NOTE: The PER system sends e-mail notification to originator that PER is closed.

5.0 DEFINITIONS

Actionee. Individual assigned by the Responsible Manager to complete resolution and/or corrective actions.

Electronic Suspense Tracking and Routing System (E-STARS). A web-based system that is a desktop tool to route, receive, respond, and status PER tasks and generate reports.

Event. A real-time occurrence or failure of any system, structure, or component (active system or passive feature) when it is required to perform is specified function.

Integrated Document Management System. A web-based system that is designated as the primary repository for storage of electronic records.

Problem Evaluation Request process. Establishes the requirements and responsibilities for the timely identification and evaluation of conditions and the correction of deficiencies adverse to quality, safety, health, operability, and the environment. It also ensures the adequate documentation and tracking of corrective actions.

Responsible Manager. Person assigned responsibility to oversee resolution of the PER, corrective action planning, and bringing the issue to closure. The term Responsible Manager denotes the person assigned to work the PER. The title Manager on the organization chart is not required to be a Responsible Manager.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Corrective Action Program Problem Evaluation Requests which contain Occurrence Reports, DOE Assessments, Internal Self-Assessments, DOH & Ecology, Independent Performance Evaluation Deficiencies & other miscellaneous records showing a deficient condition & supporting documentation.	N	Y	L	ADM-17.32a	N/A	Upon completion, records are archived in the approved electronic records section of IDMS

Documents generated, processed, approved and completed electronically in E-STARS and archived into the Managed Information Area of IDMS.

1. The Corrective Action Group is responsible for the records created in accordance with the requirements of TFC-BSM-IRM-STD-06, TFC-BSM-IRM-STD-07, TFC-BSM-IRM_DC-C-02, and the approved Records Inventory and Disposition Schedule.

2. The record custodian determines if the record is active or inactive as defined below:

   a. Active: All open files, unresolved PERs with open E-STARS tasks and subtasks.

   b. Inactive: All other records not meeting the criteria of active.

7.0 SOURCES

7.1 Requirements

1. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor."

2. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. DOE G 414.1-2A, "Quality Assurance Management System Guide."

2. TFC-BSM-IRM_DC-C-02, "Records Management."

3. TFC-BSM-IRM-STD-06, "Records Management Standard."

4. TFC-BSM-IRM-STD-07, "Electronic Records Standard."

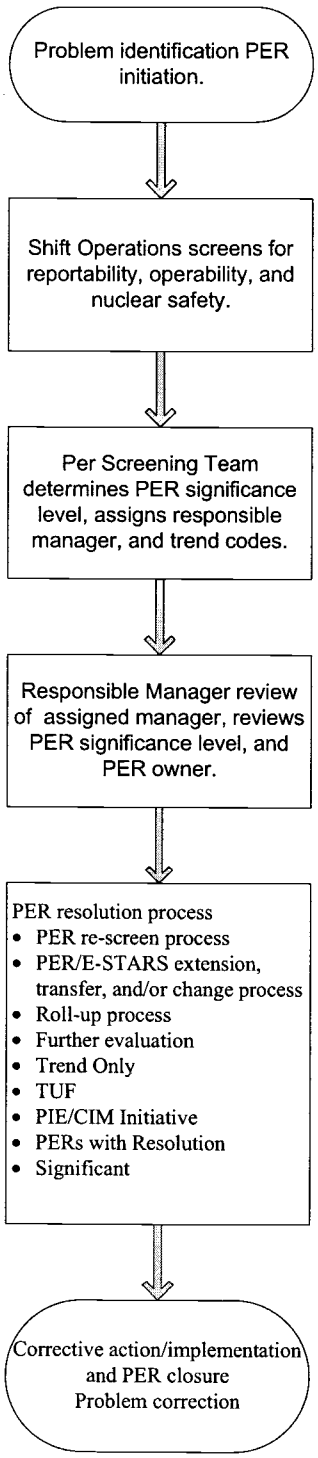
5. TFC-ESHQ-Q_ADM-C-11, "Root and Common Cause Analysis and Corrective Action Planning."

6. TFC-ESHQ-Q_ADM-C-12, "Apparent Cause Analysis and Corrective Action Planning."

7. TFC-OPS-OPER-C-24, "Occurrence Reporting and Processing of Operations Information."

8. TFC-POL-32, "Stop Work Responsibility."

Figure 1. Problem Evaluation Request Process Flow.



NOTE: E-STARS routes and tracks PERs from initiation to closure via desktop software. Sends e-mail status changes to originator and responsible manager.

Key:

PER: Problem Evaluation Request
PIE/CIM: Performance Improvement Evaluation/Continuous Improvement Management
TUF: Track Until Fixed

Table 1. PER/E-STARS Attachments File Formats/Conventions.

Files uploaded into the PER/E-STARS system will be archived as electronic records in the IDMS system. As such, files must be compatible with IDMS and are limited to the following file types:

.doc, .docx, .pdf, .tif, .gif, .jpg, .xls, .xlsx, .html, .xml, .txt, .rtf, .msg, .ppt, and .pptx

NOTE: Hanford Site Forms must be saved in .pdf format; the native Adobe file type .xdf cannot be archived in IDMS.

NOTE: Attach actual electronic files. Do not embed hyperlinks in the PER system. Linking to a file does not allow it to be archived into the IDMS system correctly.

Files uploaded into the PER system must be named in a consistent and easily identifiable manner.

Save e-mail messages as .msg or .rtf. This allows attached files and embedded graphics and photos to be saved and viewed.

Table 2. Problem Evaluation Request Significance Criteria Guidance.

CATEGORY	DESCRIPTION
Further Evaluation	A condition which requires additional information to adequately support screening. A condition needing USQ determination. Discrepancies associated with drawings or labeling will be evaluated for effects to in-process or active work and verify compensatory measures are in place, as needed.
Trend Only	An event or condition which individually is of minor consequence. Monitoring and trending of these conditions is necessary to ensure additional similar events are detected and addressed before they escalate into more significant issues. The condition has been corrected via the stated immediate actions. The condition will be corrected through the work control process and has an active work package number on the IMES. A non-occupational injury/illness or report only.
Invalid	Factually inaccurate as demonstrated by evidence, witness, or fact, and after discussion with originator. An issue outside of WRPS's authority to fix. A duplicate issue addressed in another PER.
PIE/CIM	A suggestion or industry report identifying process improvements, program enhancement, continued quality improvements, or recommendations, or used for evaluation of external lessons learned.
TUF	An event or condition that requires an action to resolve (e.g., editorial procedure revisions, equipment repair, sign posting, etc.) but does not require a causal analysis, extent of condition review or additional corrective actions developed. The condition is documented on an NCR.
PER with Resolution	An adverse condition which includes problems, such as failure to comply with the documented safety analysis, technical specifications, DOE orders, regulations, contract requirements, or administrative controls, procedures, instructions, noncompliances that adversely affect tank farm facility system hardware/software operability, reliability, or performance. The adverse condition, deficiency, defect, or deviation or other nonconformance notably diminishes the original capability and/or intent of the program/procedure or installed item. Examples include: • Vapor related events • Occurrence Report related PERs (required for categories greater than SC-4) • Roll-up PERs (host) • Externally identified findings: – Department of Energy – Washington State Department of Ecology – Washington State Department of Health – Environmental Protection Agency – Defense Nuclear Facility Safety Board – Other PERs documenting externally identified issues. • PERs with potential adverse trend data

Table 2. Problem Evaluation Request Significance Criteria Guidance. (cont.)

CATEGORY	DESCRIPTION
	• WIPP or OCRWM conditions adverse to quality. • 10 CFR 851 NTS reportable issues meeting any of the following ORPS reporting criteria – Personnel exposure greater than limits without consequence where no special medical surveillance program is required for affected personnel. 2A(5) SC-3 – Unplanned fire/explosion in a non-nuclear facility reported only because a facility evacuation (i.e., a disruption to normal operations) resulted. 2B(3) SC-3 – Process failure/discovery of uncontrolled energy source. 2C(2) SC3 • Near miss where no barrier or only one barrier prevented an event from having a reportable consequence. 10(3) SC3 or SC4
Significant PER	• An event or condition that is determined to be significant based on adverse impact on personnel safety, AB/TSR compliance, regulatory/enforcement actions, or configuration control. • A stop work condition determined to be of sufficient importance to warrant an in-depth analysis in order to develop corrective action to prevent recurrence. • A repetitive issue; i.e., an adverse event, condition, or trend determined to be of sufficient importance to warrant an in-depth analysis in order to develop corrective action to prevent recurrence. • A programmatic issue. • An intentional violation or misinterpretation. • Any significance category 1, R, or 2 Occurrence Reports as defined in TFC-OPS-OPER-C-24. • Any PAAA reportable event or condition (NTS reportable findings), except as noted above for PERs with Resolution prepared in response to selected 10CFR851 conditions/events. • Any lesser significant PER that, during analysis, is determined to be an adverse event or condition triggering the need for complex corrective actions with broad impacts to operations, maintenance, projects, programs, training and/or quality processes. • An adverse event or condition triggering the need for complex corrective actions with broad impacts to operations, maintenance, projects, programs, training, and/or quality processes. • Escalating issues or events, including vapor, chemical, or radiological exposures, which generate or have the potential to generate a high level of concern to management, the workforce, or stakeholders.

Table 3. Example PER Roll-Up Integration Table.

Host PER			
PER #	**Significance Level**	**Issue Description**	**Resolution**
PER-200X-0653	Sig PER	Radiological postings in outdoor areas do not withstand weather conditions in tank farms.	Develop improved techniques and materials to allow outdoor radiological postings to withstand weather conditions at tanks farms and repost tank farms.
Sub-Tier PERs			
PER #	**Significance Level**	**Issue Description**	**Corrective Action**
PER-200X-0714	Trend Only	Postings at BX farm are faded and illegible.	Replace postings at BX farm; upgrade to new posting as part of posting upgrade plan.
PER-200X-0695	Trend Only	Rad chains in AW farm are broken and postings are on the ground.	Replace postings at AW farm; upgrade to new postings as part of posting upgrade plan.

Task# WRPS-PER-2008-0189.11

E-STARS[R] Report
Task Detail Report
07/08/2009 1404

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.11		
Subject	WRPS-PER-2008-0189; SIG; CC-CA-10: SMP SME for hoisting and rigging review FH managment assessment		
Parent Task#	WRPS-PER-2008-0189	**Status**	Open
Reference	WRPS-PER-2008-0189	**Due**	08/07/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CC-CA-10: SMP SME for hoisting and rigging review FH managment assessment of Fleet Maintenance for potential impacts to TOC and document review to the Manager, Safety and Health. Deliverable: Internal memorandum documenting the review of the FH managment assessment of FH Fleet Maintenance. NOTE: Dependent on FH completion of action. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Awaiting Response - Due Date - 07/31/2009 0000 *Instructions:*	
	• Gaydosh, William L - Review - Awaiting Response - Due Date - 08/04/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. WRPS Compensatory Measure 7. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L) - 03/13/2009 0931
	Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L) - 03/13/2009 1101

Task# WRPS-PER-2008-0189.11

	Approved due date extension to 7/31/09. tls 3/13/09
	Extension Justification: As of March 12, 2009, the FH management assessment is reported to be in progress but not yet completed. Based on information provided to Jim geary by the responsible FH manager, the assessment report will not be available for evaluation until July 2009. Once received, additional time will be needed to perform a review of the assessment. The extension was approved by F. Beranek, ESRB Sponsor, on 3/12/09. tls 3/13/09

TASK DUE DATE HISTORY

Modified	03/13/2009 0932 - ^PER Coordinator	**New Due Date**	07/31/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	03/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Control Report! Hanford Business Use Only!

Current Completed Activities 6/25/2009 8:24:27 AM

Company: All Hanford

Activity: T09019 Crane Operator Electrical Safety Briefing. This activity captures the electrical safety briefing provided to Crane Operators using the NIOSH Alert "Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Power Lines" as reference material.

Hanford ID	Employee Name	Date Taken	Date Needed
0023463	Bottemiller,Jack Allen	06/16/2009	
5258471	Brown,William Scott	06/16/2009	
4443928	Fischer,Randy Dwayne	06/16/2009	
0040146	Hutchins,Billy Wayne	06/16/2009	
0071006	Lohman,Lonnie Everett	06/16/2009	
0001041	Lotze,Brian Frederick	06/16/2009	
0035606	McConnell,William Dona	06/16/2009	
0251820	Otterson,Jeffery Allen	06/16/2009	
9426054	Ransom,Matthew Henry	06/16/2009	
0020048	Riste,Dennis Michael	06/16/2009	
0027593	Sallee,Dennis Wayne	06/16/2009	
0096005	Webster,Robert Lee	06/16/2009	
0578220	Ziegler,William Earl	06/16/2009	

Task# WRPS-PER-2008-0189.12

E-STARS[R] Report
Task Detail Report
07/08/2009 1406

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.12		
Subject	WRPS-PER-2008-0189; SIG; EPA-01: Perform and end point assessment of the corrective actions identif		
Parent Task#	WRPS-PER-2008-0189	**Status**	Open
Reference	WRPS-PER-2008-0189	**Due**	04/03/2010
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Active
	EPA-01: Perform and end point assessment of the corrective actions identified in this report that address the completion and effectiveness of corrective actions identified for both FH and WRPS. Deliverable: An independent assessment of the corrective actions identified in this report that address the completion and effectiveness of corrective actions identified for both FH and WRPS. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Maciuca, Tino - Assign - Awaiting Response - Due Date - 03/27/2010 0000 *Instructions:*	
	• Gaydosh, William L - Review - Awaiting Response - Due Date - 03/31/2010 0000 *Instructions:*	

ATTACHMENTS	
Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc

COMMENTS	
Poster	^PER Coordinator (Steelman, Tracy L) - 06/19/2009 1448
	Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L) - 06/19/2009 1454
	Approved due date extension to 3/27/10. tls 6/19/09
	Extension Justification: There is outstanding action for FH to implement changes to the crane

Task# WRPS-PER-2008-0189.12

	operator training program based on the results of their training analysis performed as a corrective action from the crane causal analysis. FH has provided an estimated completion date for these changes to be December 2009, which is partially driven by resource constraints during contract transition. There will be additional WRPS action to make sure TOC subcontractor crane operator training is commensurate with the FH changes to the crane operator training program. Additional time will then be needed to complete the end point assessment for all identified corrective actions. The extension was approved by B. Dixon for F. Beranek, ESRB Sponsor, on 6/19/09. tls 6/19/09

TASK DUE DATE HISTORY

Modified	06/19/2009 1448 - ^PER Coordinator	**New Due Date**	03/27/2010 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/21/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0189.13

E-STARS[R] Report
Task Detail Report
07/08/2009 1406

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.13		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that Lessons Learned IB-08-048, Clarification of Expectation for Crane Functional Check, was issue		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that Lessons Learned IB-08-048, Clarification of Expectation for Crane Functional Check, was issued. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of Lessons Learned IB-08-048, Clarification of Expectation for Crane Functional Check. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brown, Robert L - Assign - Completed with comments - 01/27/2009 1651 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1420 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. lessons learned for crane event.htm 7. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	Brown, Robert L - 01/27/2009 1651
	Completed
	Lessons Learned Bulletin Number: IB-08-048 attached.
Poster	Gaydosh, William L - 01/29/2009 1420
	Concur
	I reviewed the Lessons Learned and attached documents and concur witht eh actions taken.

Task# WRPS-PER-2008-0189.13

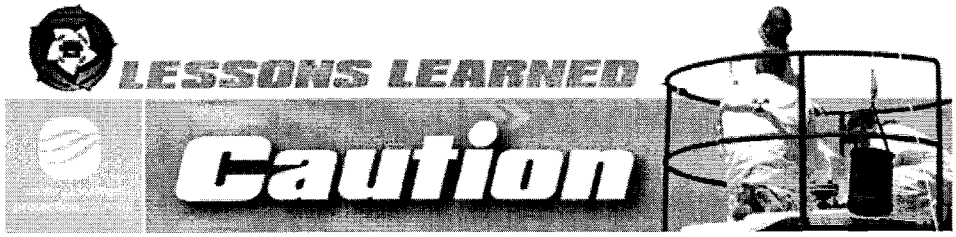
	Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0759		
	CLOSED		
	Reviewed and closed. tls 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

RPP Lessons Learned

washington river protection solutions

[redacted]



Clarification of Expectation for Crane Functional Check

Bulletin Date: Nov 13 2008 12:00AM Bulletin Number: IB-08-048

Lessons Learned Statement: A Root Cause Analysis team has been established to evaluate recent crane events. During the analysis the team determined that the pre-use inspection process for mobile cranes does not require full range of operational (no load) checks in the configuration as will be used to perform the lift or series of lifts.

Discussion: Crane Operators are required to perform a functional check of the controls per Section 14.3 of DOE-RL-92-36, item j. as follows: "Test all controls at the start of a new shift. If any controls fail to operate properly, they require adjustment or repair before operations begin."

Analysis: The functional check requirements do not specify the full level of expected checks (e.g., full range of motion for lift configuration) to be performed.

HPI Error Precursors:

- Task Demands:
  - Interpretation requirements
  - Lack of or unclear standards

ISMS Expectations:

M6 – Challenge the status quo

Actions/Recommendations: When a mobile crane is initially set up or reconfigured (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the exact configuration, as will be used, needs to be performed prior to making the actual lift or series of lifts.

References: DOE-RL-92-36 Hanford Site Hoisting and Rigging Manual

Originator: Tom Mackey, 509-373-3823

Keywords: Crane, Hoisting, Rigging

Distribution: Operations, Planning, Construction forces, Loren Martin, Tim Kramer, Tom Mackey

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Task# WRPS-PER-2008-0189.14

E-STARS[R] Report
Task Detail Report
07/08/2009 1407

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.14		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, has been modified to reflect functional		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, has been modified to reflect functional check criteria contained in Lessons Learned IB-08-048. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, modified to reflect functional check criteria contained in Lessons Learned IB-08-048. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/29/2009 0718 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1421 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. TFC-ENG-FACSUP-C-25,_Hoisting_and_Rigging.doc

COMMENTS

Poster	Kramer, Tim F - 01/29/2009 0716
Editor	Kramer, Tim F - 01/29/2009 0717
	TFC-ENG-FACSUP-C-25, REV B-4 attached. Section 4.0, 4. contains the new requirement for crane functional checks.
Poster	Gaydosh, William L - 01/29/2009 1421

Task# WRPS-PER-2008-0189.14			
	Concur		
	I reviewed TFC-ENG-FACSUP-C-25, REV B-4 and Section 4.0, 4. contains the new requirement for crane functional checks. Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0801		
	CLOSED		
	Reviewed and closed. tls 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Ownership matrix

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1.0 PURPOSE AND SCOPE

This procedure defines the process for conducting hoisting and rigging activities for WRPS. It also provides instructions for preparing hoisting and rigging instructions (e.g., critical or special lift determination (A-6003-884), critical lift plans, and special lift instructions).

This procedure defines the process to ensure the structural integrity of permanently installed lifting points.

Hoisting and Rigging activities within the scope of this procedure must comply with DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2.0 IMPLEMENTATION

The procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.1- 4.6.

4.0 PROCEDURE

1. Temperature control limits must be applied to lifting operations as follows:

   - No lifts will be performed in temperatures below 10°F (RPP-9551).
   - Rigging hardware used to perform lifts in temperatures below 30°F must have approval from the equipment manufacturer (Hanford Site Hoisting and Rigging Committee Bulletin, March 8, 2004).
   - To obtain specific temperature limitation information contact a qualified Rigging Engineer.

2. Outrigger pads must be used for all WRPS work activities requiring the use of a mobile crane. This provides greater ground stability for the crane and protection of equipment. Minimum requirements for the use of outrigger pads are as follows:

   - Minimum 2 feet square pads for 22-ton and smaller cranes
   - Minimum 3 feet square pads for cranes greater than 22-ton and up to 90-ton
   - Minimum 4 feet square pads for Grove 110-ton crane.

   The Rigging Engineer may waive the outrigger pad requirement based on review of the lift procedure or instruction, crane load charts, and RPP-CALC-25074.

3. For lifts in close tolerance situations where the potential exists for the load to be stuck, hung up, or otherwise come in undesired contact with other components or structures, the use of finer control of the load shall be employed. In such cases, a below-the-hook load indicating device (LID), manually operated chain hoist between the crane hook and the load, and/or use of radios or other means of positive communication are a few suggested methods to help meet this requirement.

4. When a mobile crane is initially set up or reconfigured (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the exact configuration, as will be used, shall be performed prior to making the actual lift or series of lifts. (Lesson Learned IB-08-048)

4.1 General Instructions

Field Work Supervisor

1. Coordinate and supervise performance of planned lifts.

2. Verify that the hoisting and rigging contractor has inspected and evaluated all lifting points as required by DOE-RL-92-36 and that all concerns have been adequately addressed and documented in the work package. Contact a qualified Rigging Engineer for any additional lifting point concerns.

3. Verify that required tags have been installed and the information on the tags is correct.

4. Ensure all other lifting bail tags that are not in accordance with this procedure are removed.

5. Ensure pre-job briefings are performed in accordance with TFC-OPS-MAINT-C-02.

6. Ensure all lifts are performed in accordance with applicable procedures, instructions, and DOE-RL-92-36.

7. For all special lifts, ensure that form A-6003-884 is complete and all required signatures are present before performing the lift.

8. Ensure all field revisions to critical lift plans are made in accordance with DOE-RL-92-36. Field revisions to special lift plans require the approval of the Field Work Supervisor and the Rigging Engineer

9. Verify the crane load chart rating and crane capacity in the intended configuration with the DL and crane operator prior to conducting the lift. If the load being lifted is 80% or more of the crane's maximum rated capacity or 90% or more of the crane's load chart capacity then ensure a critical lift plan is used to perform the lift.

Quality Assurance

10. For first time lifts of cover blocks, ensure tags are installed on each cover block listing the following information:

    - Work order number
    - Weight of component in pounds
    - Key block (if applicable)
    - Test date.

    NOTE: Tagging of any other items (cover plates, shield plugs, etc.) is at the discretion of the system/component engineer.

Designated Leader

11. Perform pre-lift and pre-job requirements in accordance with DOE-RL-92-36 and TFC-OPS-MAINT-C-02.

12. Perform all lifts as designed and approved.

13. Ensure Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is completed and approved for all special lifts prior to the lift being performed. This checklist is not required for critical lifts.

4.2 Critical and Special Lifts

Facility Manager/ Project Manager

1. Determine facility or project hoisting and rigging needs and scheduled work activities.

   A lift shall be designated critical based on the following criteria. In addition, any lift not subject to the following criteria may be designated critical as determined by the facility or project manager:

   a. Loss of control of the item being lifted would likely result in declaration of a "Site Area Emergency" or "General Emergency" as defined in the facility emergency plan or construction site emergency plan. (If the lift is not specifically addressed in a "Site Area Emergency" or "General Emergency" Emergency Action Level (EAL) and it could impact a facility or equipment containing radiological or toxicological material, consult with Nuclear Safety)

   b. The item being lifted is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility, or project operation.

   c. The cost to replace or repair the item being lifted, or the delay in operations of having the item damaged would have a negative impact on facility, organizational, or DOE budget to the extent that it would effect program commitments.

   d. The item, although non-critical, is to be lifted above or in close proximity to a critical item or component (e.g., a DST primary ventilation system).

   e. The load being lifted is 80% or more of a mobile crane's gross load chart rating (total maximum capacity of the crane) or 90% or more of the crane's load chart rating in any configuration for the maximum radius to be experienced. In this situation the radius shall be verified by actual measurement and not by the LMI alone.

   f. Two mobile cranes are lifting the load and the load share equals more than 70% of one or both crane's chart rating for the maximum radius that will be experienced.

2. If a lift is considered critical or special, complete and sign the Lift Instructions Determination form (A-6003-884).

3. Relay to the area task planner the proposed hoisting and rigging needs and requirements.

Planner

4. Coordinate development of the Critical Lift Plan or Special Lift Instructions in accordance with the guidelines set forth in the Lift Instructions Determination (A-6003-884) and this procedure.

5. As a minimum, ensure critical lift plans contain approval signatures from the following personnel:

   - Technical Approver – Qualified person having technical knowledge of the hoisting and rigging equipment, as designated by the responsible hoisting and rigging contractor
   - Qualified Rigging Engineer
   - Responsible Field Work Supervisor (FWS)
   - Qualified Occupational Safety Representative – normally a field safety representative
   - Responsible manager – normally the facility or project manager.

   Additional signatures may be added as required by the facility or project manager.

6. Include the original Critical Lift Plan as part of the work package as the implementing document for the pre-job briefing and performance of the lift(s).

7. For development of special lift instructions, coordinate completion of the Lift Instructions Determination form (A-6003-884).

Manager responsible for lift/Rigging Engineer/System Engineer

8. Complete the Lift Instructions Determination form (A-6003-884). Once completed, this form, along with any sketches and/or additional information, will serve as the Special Lift Instruction and is inserted into the work package as such.

   NOTE: Special conditions are included in the form, which is used to capture necessary information to be included in the work package, such as removing cover blocks, performing inspection, replacing cover blocks, and use of items such as spacers and spreader beams.

Planner	9.	Ensure that the completed form (A-6003-884) contains the required signatures and is delivered to the hoisting and rigging contractor for development of the critical lift plan or added directly to the work package as the special lift instruction. • Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is required for all special lifts and must be included in the work package for those lifts. • The Riggers and Operators Field Verification Checklist is not required for critical lifts and should be discarded prior to entering A-6003-884 into the work package for critical lifts.
Critical Lift Procedure Preparer (Author)	10.	Using the completed and approved A-6003-884 form as guidance and direction, prepare the Critical Lift Plan and return it to the facility/project planner.
Planner	11.	Submit the work package for approval in accordance with TFC-OPS-MAINT-C-01.
	12.	Complete all applicable post-lift documentation. NOTE: Documentation for critical and special lifts is retained in CHAMPS/IDMS as part of the completed work package. This satisfies the applicable requirements in Section 3.7 of DOE-RL-92-36.
Rigging Engineer	13.	Ensure that critical lift plans and special lift instructions include the following statement when applicable: "Engineering has established the Recommended Not-To-Exceed Lifting Pull limit as xxxx lbs." NOTE: This applies to lifting items that may be rusted in place or otherwise potentially stuck.
	14.	For critical and special lifts, if test documentation is not available for permanently installed rigging hardware, ensure that appropriate supporting calculations, design media, inspection requirements, torque requirements, and hoisting and rigging requirements are included prior to approving the critical lift plan/special lift instructions.
	15.	Review the critical lift plan or special lift instruction and determine if it is ready for implementation. a. If it meets conditions for approval, sign and return the plan/instruction to the planner. b. If it does not meet conditions for approval, return the plan/instruction to the planner with recommendations for revision.

Safety & Health	16.	Perform functions as the "responsible Safety organization" in accordance with DOE-RL-92-36.
	17.	Ensure subcontractor's critical lift plans and critical lifts they perform are approved by the subcontractor's internal safety organization prior to approval.
	18.	Review and approve by signing the Critical Lift Plan.

4.3 Lifting Point Inspection Preparation for Critical and Special Lifts

The process for verification of lifting point structural integrity is shown in Figure 1.

Lifting point inspections shall be performed using a graded approach. Cover blocks/cover plates with permanently installed lifting points shall be inspected using Section 4.6, and evaluated using RPP-8360. Shield plugs shall be inspected and evaluated as determined by the system/ component engineer. Non-analyzed shield plugs should be lifted using a spacer. Items to be lifted will be inspected and evaluated in accordance with DOE-RL-92-36 by the hoisting and rigging contractor, including lift points under multiple (stacked) cover blocks or where lifting points are difficult to access. The need for additional inspection and evaluation is at the discretion of the rigging engineer, the system engineer, or the component engineer.

NOTE: Cover blocks/cover plates that will not be lifted over tank farm structures (such as underground storage tanks, catch tanks, double-contained receiver tanks) and are not considered critical or special lifts only require inspection and evaluation by the hoisting and rigging contractor per DOE-RL-92-36.

Field Crane Coordinator	1.	Ensure lift schedule is available to the system/component and hoisting and rigging engineers.
System/Component Engineer	2.	Follow TFC-ENG-DESIGN-D-37; provide supporting documentation to planner, as needed.
Planner	3.	Prepare a field inspection folder, if requested by the system/ component engineer, containing pertinent lifting point drawings, Engineering Change Notices (ECNs), and a blank Lifting Point Field Inspection Report for each lifting point.
	4.	Ensure that the work order supports the field inspection.

4.4 Field Inspection

Quality Assurance	1.	If required by Engineering, perform field inspections in accordance with Section 4.6.
		a. Ensure that traceability is maintained between inspection documents and the inspected lifting point (e.g., tags).
		b. Deliver the Lifting Point Field Inspection Report to the system/component engineer.

System or Component Engineer	2.	Evaluate the field inspection report (in accordance with TFC-ENG-DESIGN-D-37), and based on findings, perform the required actions to ensure that the identified lifting points can be safely used.
Rigging Engineer	3.	Evaluate corrective actions and approve ECNs in accordance with TFC-ENG-DESIGN-D-37.

4.5 Structural Analysis

System or Component Engineer	1.	Perform structural analysis and determine lifting points in accordance with TFC-ENG-DESIGN-D-37 and provide data to planner.
Engineering Discipline Lead - Civil/Structural Discipline	2.	Determine the type of calculation required in accordance with TFC-ENG-DESIGN-C-10. A letter of appointment may be issued to identify approved alternates for this determination.
Analyst	3.	Perform structural evaluation of lifting points in accordance with TFC-ENG-DESIGN-C-10 and RPP-8360.
System or Component Engineer	4.	Based on the structural evaluation, determine if the lifting point(s) is adequate to lift the intended item (e.g., cover block, cover plate, shield plug) and verify tags are in place as applicable (see Section 4.4, step 16). a. If adequate, notify the planner and provide the planner with a copy of the analytical calculations. b. If inadequate, contact the Engineering Discipline Lead - Civil/ Structural, for a resolution (RPP-9514).
Analyst	5.	Record analysis as required by TFC-ENG-DESIGN-C-10. Document computational calculations on A-6003-884, item 9.
	6.	Record inspection report results and analysis into the Integrated Data Management System (IDMS) Lifting Point database per TFC-ENG-DESIGN-D-27.

4.6 Inspection of Existing Permanently Installed Lifting Points

This section ensures that lifting points are inspected and that the inspection findings are correctly provided in the evaluation package (see Figure 2).

NOTE: The Lifting Point Field Report (site form A-6003-764 or A-6003-765) records the observed condition of existing lifting points for comparison to lifting point design documentation and supporting calculations.

System/Component Engineer	1.	Evaluate if Quality Assurance (QA) field inspection is needed.

2. If the decision is made to not use QA field inspection, photograph the lifting point(s).

3. Document observations in Lifting Point Field Report By Engineer (A-6003-764) as well as Field Inspection Document Index (A-6003-766).

4. If a decision is made to use QA field inspection (A-6003-765), prepare inspection folder.

Quality Assurance Technician

5. If measuring and test equipment will be used in the inspection process, record the manufacturer, model, serial number, and calibration status in Section 6.0 of A-6003-765.

6. Using the documents specified by the planner in the Field Inspection Document Index (A-6003-766), perform an inspection of each lifting point e.g., cover block, cover plate, shield plug, identified.

7. To the maximum extent practicable, complete an inspection report for each lifting point.

   a. If any part of the QA inspection (A-6003-765) cannot be completed, record the reason for non-completion on the Lifting Field Inspection Report (A-6003-765) and appropriately annotate the steps that will not be completed.

   b. If corrosion is present, other than superficial surface rust, inform the system engineer.

   c. Submit the completed Lifting Point Field Inspection Report to the system/component engineer.

   NOTE: The lifting point inspection report, by itself, does not determine if a lifting point is safe to use.

System/Component Engineer

8. Review the Lifting Point Field Inspection Report for completeness and accuracy.

9. Determine if additional inspection or Non-Destructive Examination (NDE) is required and specify any additional inspection or NDE in Section 5.0 of the Lifting Point Field Inspection Report form (A-6003-769).

10. Return the Lifting Point Field Inspection Report to Quality Assurance if additional inspection or NDE is required.

    NOTE: All additional inspection and/or NDE results shall be noted and recorded on the Lifting Point Field Inspection Report.

11. Sign the Lifting Point Field Inspection Report when the report is complete, and forward the report to an analyst and put an electronic copy into IDMS.

5.0 DEFINITIONS

First time lift. Any lift performed on a cover block that does not have a weight tag installed in accordance with this procedure.

Outrigger pad. Blocking which is placed under a crane's outrigger floats to provide greater stability for the crane.

Permanently installed lifting point. Any lifting point that is a permanent part of the item to be lifted or a lift point that is left in place on the item to be lifted.

Temporary installed lifting point. Lifting points installed for specific lifts and subsequently removed. These lift points are considered rigging hardware and are addressed by DOE-RL-92-36 (e.g., temporarily installed swivel hoist rings and shouldered eye bolts).

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Work Order	Y	Y	Y	ENV-1.d8a	N/A	Planning
Hoisting and Rigging: Lift Instructions Determination form (A-6003-884)	N	N	N	ENV-1.d8a	N/A	Planning

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. HNF-SD-WM-TSR-006, "Tank Farms Technical Safety Requirements," Administrative Control 5.7, "Safety Management Programs."

2. TFC-PLN-40, "Hoisting and Rigging Safety Management Program Plan."

7.2 References

1. DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2. Hanford Site Hoisting and Rigging Committee Hoisting and Rigging Bulletin, "Eyebolt and Swivel Hoist Ring Temperature Limitations," March 8, 2004.

3. HNF-IP-1266, "Tank Farm Operations Administrative Controls," Section 5.7, "Safety Management Programs, "Section 3.C.2K, "Hoisting and Rigging."

4. RPP-8360, "Lifting Bail Evaluation Process."

5. RPP-9551, "Qualification Test of the Bail Repair Assembly & Bail Load Testing."

6. RPP-16330, "Standard Lifting Point Rated Load Capacities."

7. RPP-CALC-25074, "Crane Outrigger Pad loads over Waste Transfer Lines."

8. TFC-BSM-IRM_DC-C-02, "Records Management."

9. TFC-ENG-DESIGN-C-06, "Engineering Change Control."

10. TFC-ENG-DESIGN-D-27, "Electronic Information Files."

11. TFC-ENG-FACSUP-C-23, "Equipment Identification and Data Management."

12. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

13. TFC-OPS-MAINT-C-02, "Pre-Job Briefings."

14. TFC-PLN-40, "Hoisting and Rigging Safety Management Program."

Figure 1. Verification of Lifting Point Structural Integrity Process.

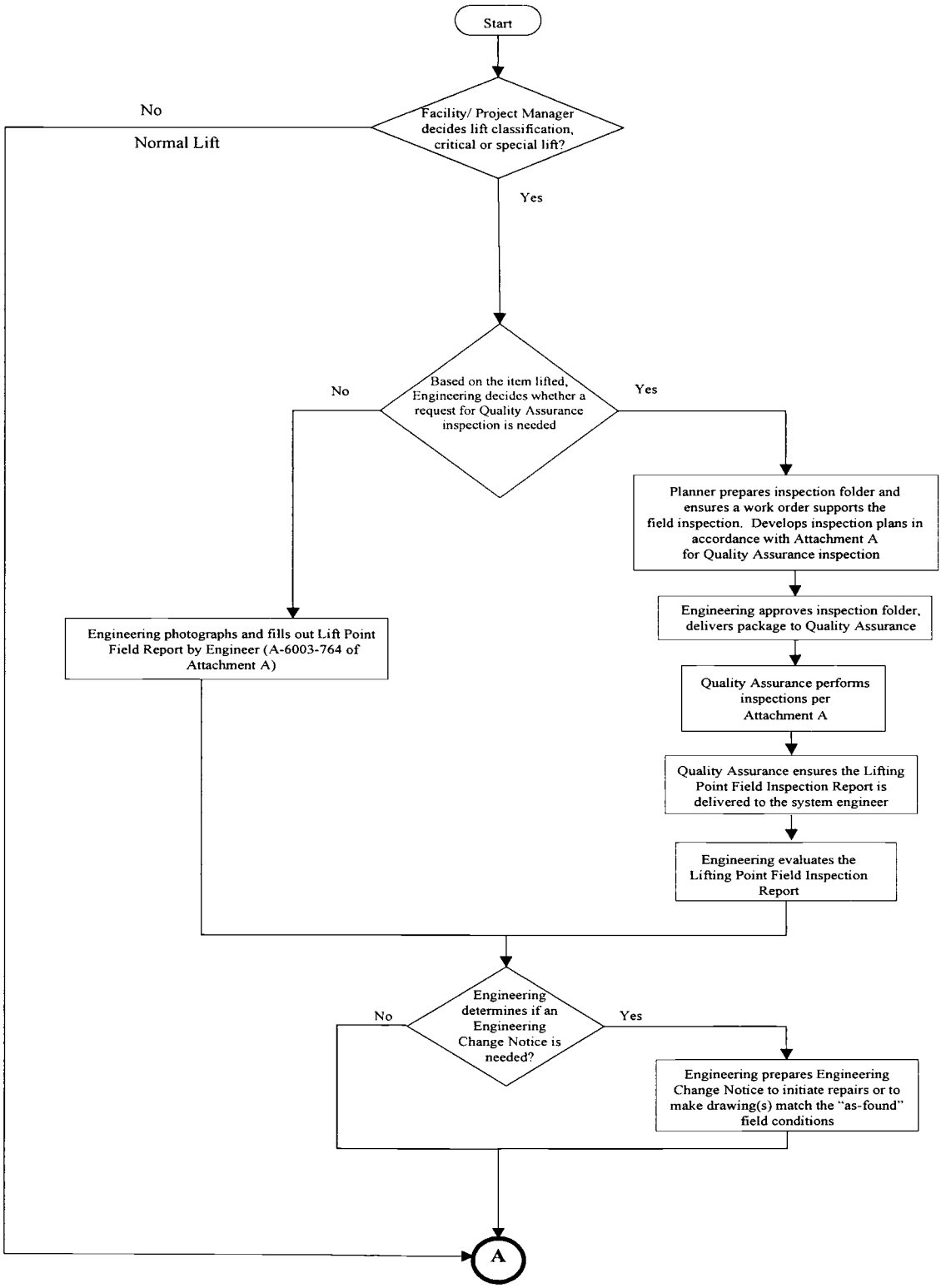


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

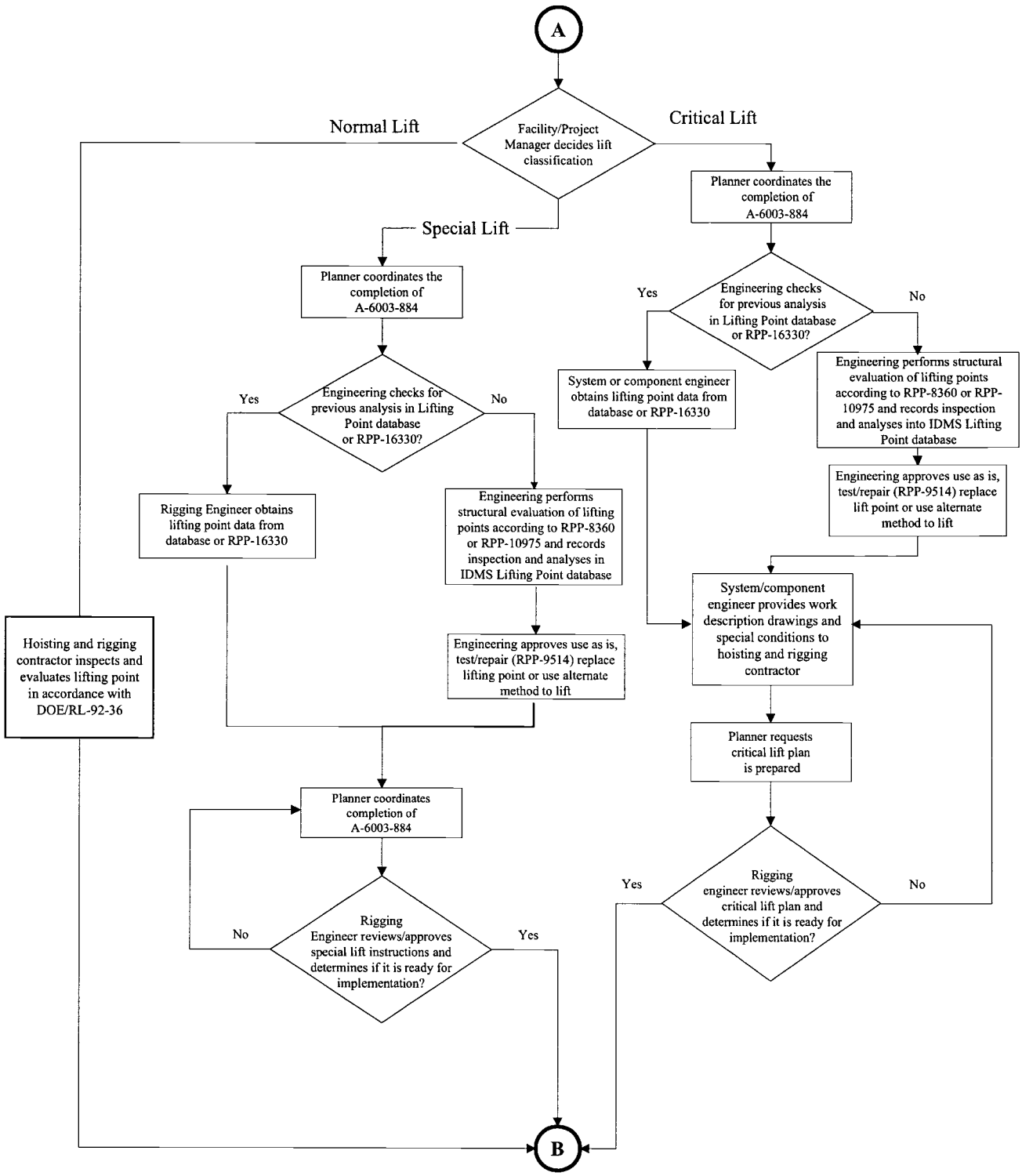


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

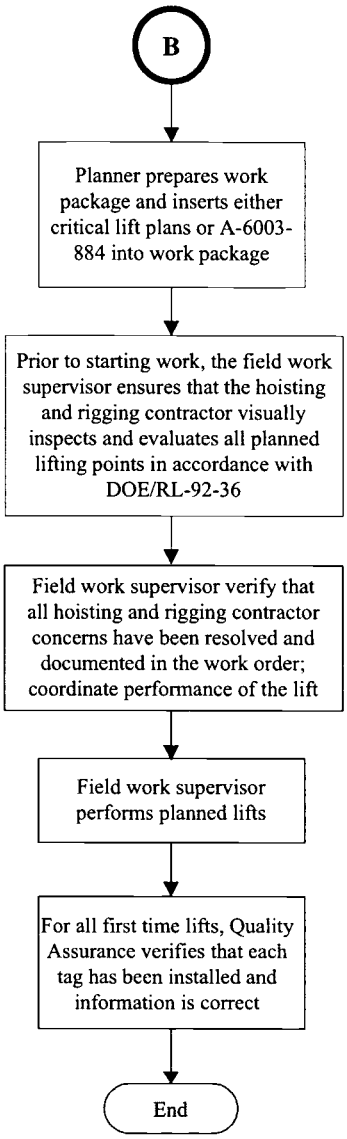
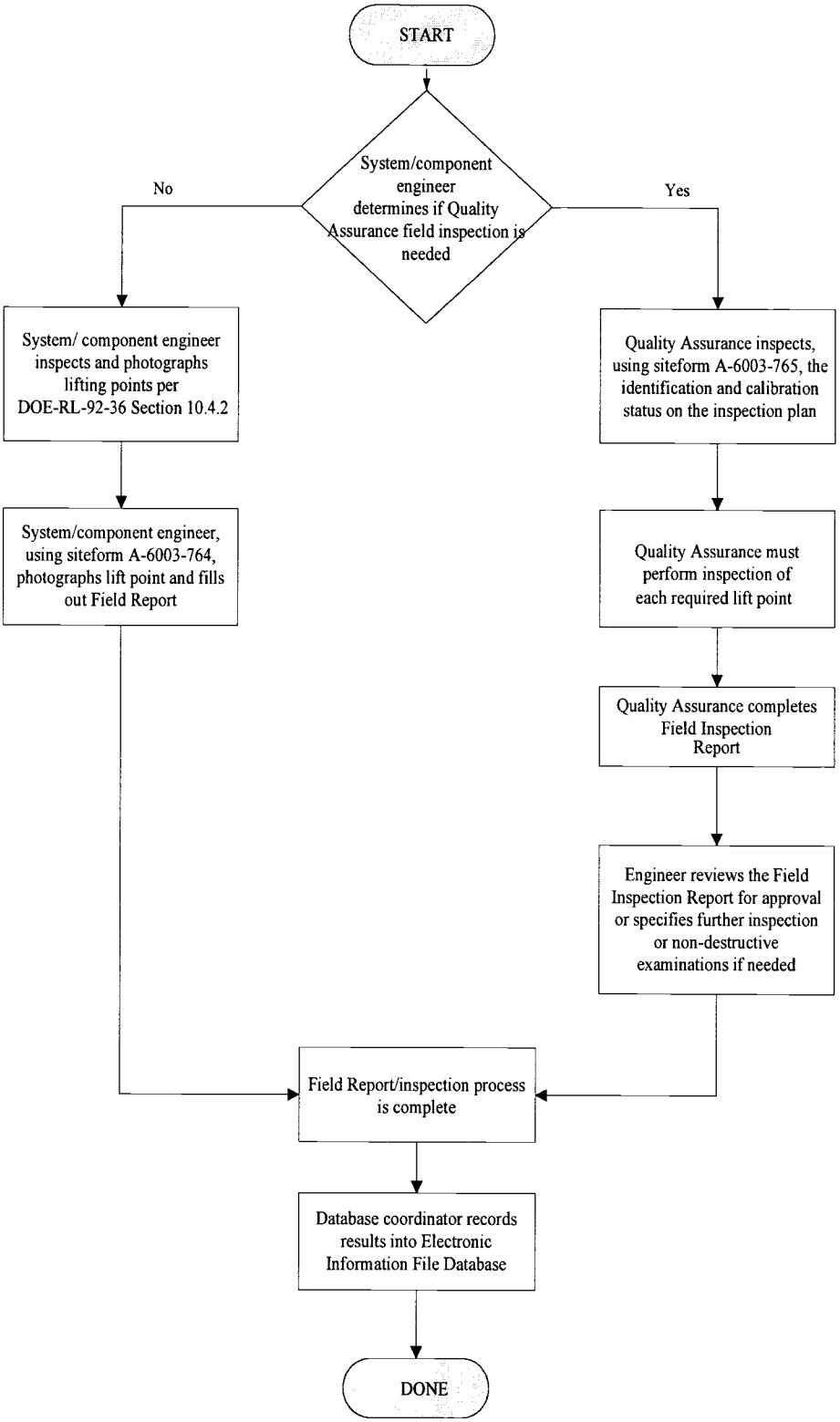


Figure 2. Inspection of Permanent Lifting Points Process.



Task# WRPS-PER-2008-0189.15

E-STARS[R] Report
Task Detail Report
07/08/2009 1409

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.15		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that TFC-ENG-FACSUP-C-25 has been modified to require critical lift designations for lifts at or a		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that TFC-ENG-FACSUP-C-25 has been modified to require critical lift designations for lifts at or above 90% of crane load chart rating. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of TFC-ENG-FACSUP-C-25 modified to require critical lift designations for lifts at or above 90% of a crane load chart rating. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/29/2009 0723 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1422 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. Link to PER 6. PER 2008-0189 CCA Final.doc 7. TFC-ENG-FACSUP-C-25,_Hoisting_and_Rigging.doc

COMMENTS

Poster	Kramer, Tim F - 01/29/2009 0722
	TFC-ENG-FACSUP-C-25, REV B-4 attached. Section 4.2,1. (e) contains new requirement for critical lift determination based on 90% of load chart rating.
Poster	Gaydosh, William L - 01/29/2009 1422
	Concur

Task# WRPS-PER-2008-0189.15

	I reviewed TFC-ENG-FACSUP-C-25, REV B-4 and Section 4.2.1. (e) contains new requirement for critical lift determination based on 90% of load chart rating. B.Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0802		
	CLOSED		
	Reviewed and closed. tls 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Ownership matrix

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1.0 PURPOSE AND SCOPE

This procedure defines the process for conducting hoisting and rigging activities for WRPS. It also provides instructions for preparing hoisting and rigging instructions (e.g., critical or special lift determination (A-6003-884), critical lift plans, and special lift instructions).

This procedure defines the process to ensure the structural integrity of permanently installed lifting points.

Hoisting and Rigging activities within the scope of this procedure must comply with DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2.0 IMPLEMENTATION

The procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.1- 4.6.

4.0 PROCEDURE

1. Temperature control limits must be applied to lifting operations as follows:

   - No lifts will be performed in temperatures below 10°F (RPP-9551).
   - Rigging hardware used to perform lifts in temperatures below 30°F must have approval from the equipment manufacturer (Hanford Site Hoisting and Rigging Committee Bulletin, March 8, 2004).
   - To obtain specific temperature limitation information contact a qualified Rigging Engineer.

2. Outrigger pads must be used for all WRPS work activities requiring the use of a mobile crane. This provides greater ground stability for the crane and protection of equipment. Minimum requirements for the use of outrigger pads are as follows:

   - Minimum 2 feet square pads for 22-ton and smaller cranes
   - Minimum 3 feet square pads for cranes greater than 22-ton and up to 90-ton
   - Minimum 4 feet square pads for Grove 110-ton crane.

   The Rigging Engineer may waive the outrigger pad requirement based on review of the lift procedure or instruction, crane load charts, and RPP-CALC-25074.

3. For lifts in close tolerance situations where the potential exists for the load to be stuck, hung up, or otherwise come in undesired contact with other components or structures, the use of finer control of the load shall be employed. In such cases, a below-the-hook load indicating device (LID), manually operated chain hoist between the crane hook and the load, and/or use of radios or other means of positive communication are a few suggested methods to help meet this requirement.

4. When a mobile crane is initially set up or reconfigured (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the exact configuration, as will be used, shall be performed prior to making the actual lift or series of lifts. (Lesson Learned IB-08-048)

4.1 General Instructions

Field Work Supervisor

1. Coordinate and supervise performance of planned lifts.

2. Verify that the hoisting and rigging contractor has inspected and evaluated all lifting points as required by DOE-RL-92-36 and that all concerns have been adequately addressed and documented in the work package. Contact a qualified Rigging Engineer for any additional lifting point concerns.

3. Verify that required tags have been installed and the information on the tags is correct.

4. Ensure all other lifting bail tags that are not in accordance with this procedure are removed.

5. Ensure pre-job briefings are performed in accordance with TFC-OPS-MAINT-C-02.

6. Ensure all lifts are performed in accordance with applicable procedures, instructions, and DOE-RL-92-36.

7. For all special lifts, ensure that form A-6003-884 is complete and all required signatures are present before performing the lift.

8. Ensure all field revisions to critical lift plans are made in accordance with DOE-RL-92-36. Field revisions to special lift plans require the approval of the Field Work Supervisor and the Rigging Engineer

9. Verify the crane load chart rating and crane capacity in the intended configuration with the DL and crane operator prior to conducting the lift. If the load being lifted is 80% or more of the crane's maximum rated capacity or 90% or more of the crane's load chart capacity then ensure a critical lift plan is used to perform the lift.

Quality Assurance

10. For first time lifts of cover blocks, ensure tags are installed on each cover block listing the following information:

    - Work order number
    - Weight of component in pounds
    - Key block (if applicable)
    - Test date.

    NOTE: Tagging of any other items (cover plates, shield plugs, etc.) is at the discretion of the system/component engineer.

Designated Leader

11. Perform pre-lift and pre-job requirements in accordance with DOE-RL-92-36 and TFC-OPS-MAINT-C-02.

12. Perform all lifts as designed and approved.

13. Ensure Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is completed and approved for all special lifts prior to the lift being performed. This checklist is not required for critical lifts.

4.2 Critical and Special Lifts

Facility Manager/ Project Manager

1. Determine facility or project hoisting and rigging needs and scheduled work activities.

   A lift shall be designated critical based on the following criteria. In addition, any lift not subject to the following criteria may be designated critical as determined by the facility or project manager:

   a. Loss of control of the item being lifted would likely result in declaration of a "Site Area Emergency" or "General Emergency" as defined in the facility emergency plan or construction site emergency plan. (If the lift is not specifically addressed in a "Site Area Emergency" or "General Emergency" Emergency Action Level (EAL) and it could impact a facility or equipment containing radiological or toxicological material, consult with Nuclear Safety)

   b. The item being lifted is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility, or project operation.

   c. The cost to replace or repair the item being lifted, or the delay in operations of having the item damaged would have a negative impact on facility, organizational, or DOE budget to the extent that it would effect program commitments.

   d. The item, although non-critical, is to be lifted above or in close proximity to a critical item or component (e.g., a DST primary ventilation system).

   e. The load being lifted is 80% or more of a mobile crane's gross load chart rating (total maximum capacity of the crane) or 90% or more of the crane's load chart rating in any configuration for the maximum radius to be experienced. In this situation the radius shall be verified by actual measurement and not by the LMI alone.

   f. Two mobile cranes are lifting the load and the load share equals more than 70% of one or both crane's chart rating for the maximum radius that will be experienced.

2. If a lift is considered critical or special, complete and sign the Lift Instructions Determination form (A-6003-884).

3. Relay to the area task planner the proposed hoisting and rigging needs and requirements.

Planner

4. Coordinate development of the Critical Lift Plan or Special Lift Instructions in accordance with the guidelines set forth in the Lift Instructions Determination (A-6003-884) and this procedure.

5. As a minimum, ensure critical lift plans contain approval signatures from the following personnel:

   - Technical Approver – Qualified person having technical knowledge of the hoisting and rigging equipment, as designated by the responsible hoisting and rigging contractor
   - Qualified Rigging Engineer
   - Responsible Field Work Supervisor (FWS)
   - Qualified Occupational Safety Representative – normally a field safety representative
   - Responsible manager – normally the facility or project manager.

   Additional signatures may be added as required by the facility or project manager.

6. Include the original Critical Lift Plan as part of the work package as the implementing document for the pre-job briefing and performance of the lift(s).

7. For development of special lift instructions, coordinate completion of the Lift Instructions Determination form (A-6003-884).

Manager responsible for lift/Rigging Engineer/System Engineer

8. Complete the Lift Instructions Determination form (A-6003-884). Once completed, this form, along with any sketches and/or additional information, will serve as the Special Lift Instruction and is inserted into the work package as such.

   NOTE: Special conditions are included in the form, which is used to capture necessary information to be included in the work package, such as removing cover blocks, performing inspection, replacing cover blocks, and use of items such as spacers and spreader beams.

Planner	9.	Ensure that the completed form (A-6003-884) contains the required signatures and is delivered to the hoisting and rigging contractor for development of the critical lift plan or added directly to the work package as the special lift instruction. • Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is required for all special lifts and must be included in the work package for those lifts. • The Riggers and Operators Field Verification Checklist is not required for critical lifts and should be discarded prior to entering A-6003-884 into the work package for critical lifts.
Critical Lift Procedure Preparer (Author)	10.	Using the completed and approved A-6003-884 form as guidance and direction, prepare the Critical Lift Plan and return it to the facility/project planner.
Planner	11.	Submit the work package for approval in accordance with TFC-OPS-MAINT-C-01.
	12.	Complete all applicable post-lift documentation. NOTE: Documentation for critical and special lifts is retained in CHAMPS/IDMS as part of the completed work package. This satisfies the applicable requirements in Section 3.7 of DOE-RL-92-36.
Rigging Engineer	13.	Ensure that critical lift plans and special lift instructions include the following statement when applicable: "Engineering has established the Recommended Not-To-Exceed Lifting Pull limit as xxxx lbs." NOTE: This applies to lifting items that may be rusted in place or otherwise potentially stuck.
	14.	For critical and special lifts, if test documentation is not available for permanently installed rigging hardware, ensure that appropriate supporting calculations, design media, inspection requirements, torque requirements, and hoisting and rigging requirements are included prior to approving the critical lift plan/special lift instructions.
	15.	Review the critical lift plan or special lift instruction and determine if it is ready for implementation. a. If it meets conditions for approval, sign and return the plan/instruction to the planner. b. If it does not meet conditions for approval, return the plan/instruction to the planner with recommendations for revision.

Safety & Health

16. Perform functions as the "responsible Safety organization" in accordance with DOE-RL-92-36.

17. Ensure subcontractor's critical lift plans and critical lifts they perform are approved by the subcontractor's internal safety organization prior to approval.

18. Review and approve by signing the Critical Lift Plan.

4.3 Lifting Point Inspection Preparation for Critical and Special Lifts

The process for verification of lifting point structural integrity is shown in Figure 1.

Lifting point inspections shall be performed using a graded approach. Cover blocks/cover plates with permanently installed lifting points shall be inspected using Section 4.6, and evaluated using RPP-8360. Shield plugs shall be inspected and evaluated as determined by the system/ component engineer. Non-analyzed shield plugs should be lifted using a spacer. Items to be lifted will be inspected and evaluated in accordance with DOE-RL-92-36 by the hoisting and rigging contractor, including lift points under multiple (stacked) cover blocks or where lifting points are difficult to access. The need for additional inspection and evaluation is at the discretion of the rigging engineer, the system engineer, or the component engineer.

NOTE: Cover blocks/cover plates that will not be lifted over tank farm structures (such as underground storage tanks, catch tanks, double-contained receiver tanks) and are not considered critical or special lifts only require inspection and evaluation by the hoisting and rigging contractor per DOE-RL-92-36.

Field Crane Coordinator

1. Ensure lift schedule is available to the system/component and hoisting and rigging engineers.

System/Component Engineer

2. Follow TFC-ENG-DESIGN-D-37; provide supporting documentation to planner, as needed.

Planner

3. Prepare a field inspection folder, if requested by the system/ component engineer, containing pertinent lifting point drawings, Engineering Change Notices (ECNs), and a blank Lifting Point Field Inspection Report for each lifting point.

4. Ensure that the work order supports the field inspection.

4.4 Field Inspection

Quality Assurance

1. If required by Engineering, perform field inspections in accordance with Section 4.6.

   a. Ensure that traceability is maintained between inspection documents and the inspected lifting point (e.g., tags).

   b. Deliver the Lifting Point Field Inspection Report to the system/component engineer.

System or Component Engineer	2.	Evaluate the field inspection report (in accordance with TFC-ENG-DESIGN-D-37), and based on findings, perform the required actions to ensure that the identified lifting points can be safely used.
Rigging Engineer	3.	Evaluate corrective actions and approve ECNs in accordance with TFC-ENG-DESIGN-D-37.

4.5 Structural Analysis

System or Component Engineer	1.	Perform structural analysis and determine lifting points in accordance with TFC-ENG-DESIGN-D-37 and provide data to planner.
Engineering Discipline Lead - Civil/Structural Discipline	2.	Determine the type of calculation required in accordance with TFC-ENG-DESIGN-C-10. A letter of appointment may be issued to identify approved alternates for this determination.
Analyst	3.	Perform structural evaluation of lifting points in accordance with TFC-ENG-DESIGN-C-10 and RPP-8360.
System or Component Engineer	4.	Based on the structural evaluation, determine if the lifting point(s) is adequate to lift the intended item (e.g., cover block, cover plate, shield plug) and verify tags are in place as applicable (see Section 4.4, step 16). a. If adequate, notify the planner and provide the planner with a copy of the analytical calculations. b. If inadequate, contact the Engineering Discipline Lead - Civil/ Structural, for a resolution (RPP-9514).
Analyst	5.	Record analysis as required by TFC-ENG-DESIGN-C-10. Document computational calculations on A-6003-884, item 9.
	6.	Record inspection report results and analysis into the Integrated Data Management System (IDMS) Lifting Point database per TFC-ENG-DESIGN-D-27.

4.6 Inspection of Existing Permanently Installed Lifting Points

This section ensures that lifting points are inspected and that the inspection findings are correctly provided in the evaluation package (see Figure 2).

NOTE: The Lifting Point Field Report (site form A-6003-764 or A-6003-765) records the observed condition of existing lifting points for comparison to lifting point design documentation and supporting calculations.

System/Component Engineer	1.	Evaluate if Quality Assurance (QA) field inspection is needed.

2. If the decision is made to not use QA field inspection, photograph the lifting point(s).

3. Document observations in Lifting Point Field Report By Engineer (A-6003-764) as well as Field Inspection Document Index (A-6003-766).

4. If a decision is made to use QA field inspection (A-6003-765), prepare inspection folder.

Quality Assurance Technician

5. If measuring and test equipment will be used in the inspection process, record the manufacturer, model, serial number, and calibration status in Section 6.0 of A-6003-765.

6. Using the documents specified by the planner in the Field Inspection Document Index (A-6003-766), perform an inspection of each lifting point e.g., cover block, cover plate, shield plug, identified.

7. To the maximum extent practicable, complete an inspection report for each lifting point.

   a. If any part of the QA inspection (A-6003-765) cannot be completed, record the reason for non-completion on the Lifting Field Inspection Report (A-6003-765) and appropriately annotate the steps that will not be completed.

   b. If corrosion is present, other than superficial surface rust, inform the system engineer.

   c. Submit the completed Lifting Point Field Inspection Report to the system/component engineer.

   NOTE: The lifting point inspection report, by itself, does not determine if a lifting point is safe to use.

System/Component Engineer

8. Review the Lifting Point Field Inspection Report for completeness and accuracy.

9. Determine if additional inspection or Non-Destructive Examination (NDE) is required and specify any additional inspection or NDE in Section 5.0 of the Lifting Point Field Inspection Report form (A-6003-769).

10. Return the Lifting Point Field Inspection Report to Quality Assurance if additional inspection or NDE is required.

    NOTE: All additional inspection and/or NDE results shall be noted and recorded on the Lifting Point Field Inspection Report.

11. Sign the Lifting Point Field Inspection Report when the report is complete, and forward the report to an analyst and put an electronic copy into IDMS.

5.0 DEFINITIONS

First time lift. Any lift performed on a cover block that does not have a weight tag installed in accordance with this procedure.

Outrigger pad. Blocking which is placed under a crane's outrigger floats to provide greater stability for the crane.

Permanently installed lifting point. Any lifting point that is a permanent part of the item to be lifted or a lift point that is left in place on the item to be lifted.

Temporary installed lifting point. Lifting points installed for specific lifts and subsequently removed. These lift points are considered rigging hardware and are addressed by DOE-RL-92-36 (e.g., temporarily installed swivel hoist rings and shouldered eye bolts).

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Work Order	Y	Y	Y	ENV-1.d8a	N/A	Planning
Hoisting and Rigging: Lift Instructions Determination form (A-6003-884)	N	N	N	ENV-1.d8a	N/A	Planning

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. HNF-SD-WM-TSR-006, "Tank Farms Technical Safety Requirements," Administrative Control 5.7, "Safety Management Programs."

2. TFC-PLN-40, "Hoisting and Rigging Safety Management Program Plan."

7.2 References

1. DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2. Hanford Site Hoisting and Rigging Committee Hoisting and Rigging Bulletin, "Eyebolt and Swivel Hoist Ring Temperature Limitations," March 8, 2004.

3. HNF-IP-1266, "Tank Farm Operations Administrative Controls," Section 5.7, "Safety Management Programs, "Section 3.C.2K, "Hoisting and Rigging."

4. RPP-8360, "Lifting Bail Evaluation Process."

5. RPP-9551, "Qualification Test of the Bail Repair Assembly & Bail Load Testing."

6. RPP-16330, "Standard Lifting Point Rated Load Capacities."

7. RPP-CALC-25074, "Crane Outrigger Pad loads over Waste Transfer Lines."

8. TFC-BSM-IRM_DC-C-02, "Records Management."

9. TFC-ENG-DESIGN-C-06, "Engineering Change Control."

10. TFC-ENG-DESIGN-D-27, "Electronic Information Files."

11. TFC-ENG-FACSUP-C-23, "Equipment Identification and Data Management."

12. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

13. TFC-OPS-MAINT-C-02, "Pre-Job Briefings."

14. TFC-PLN-40, "Hoisting and Rigging Safety Management Program."

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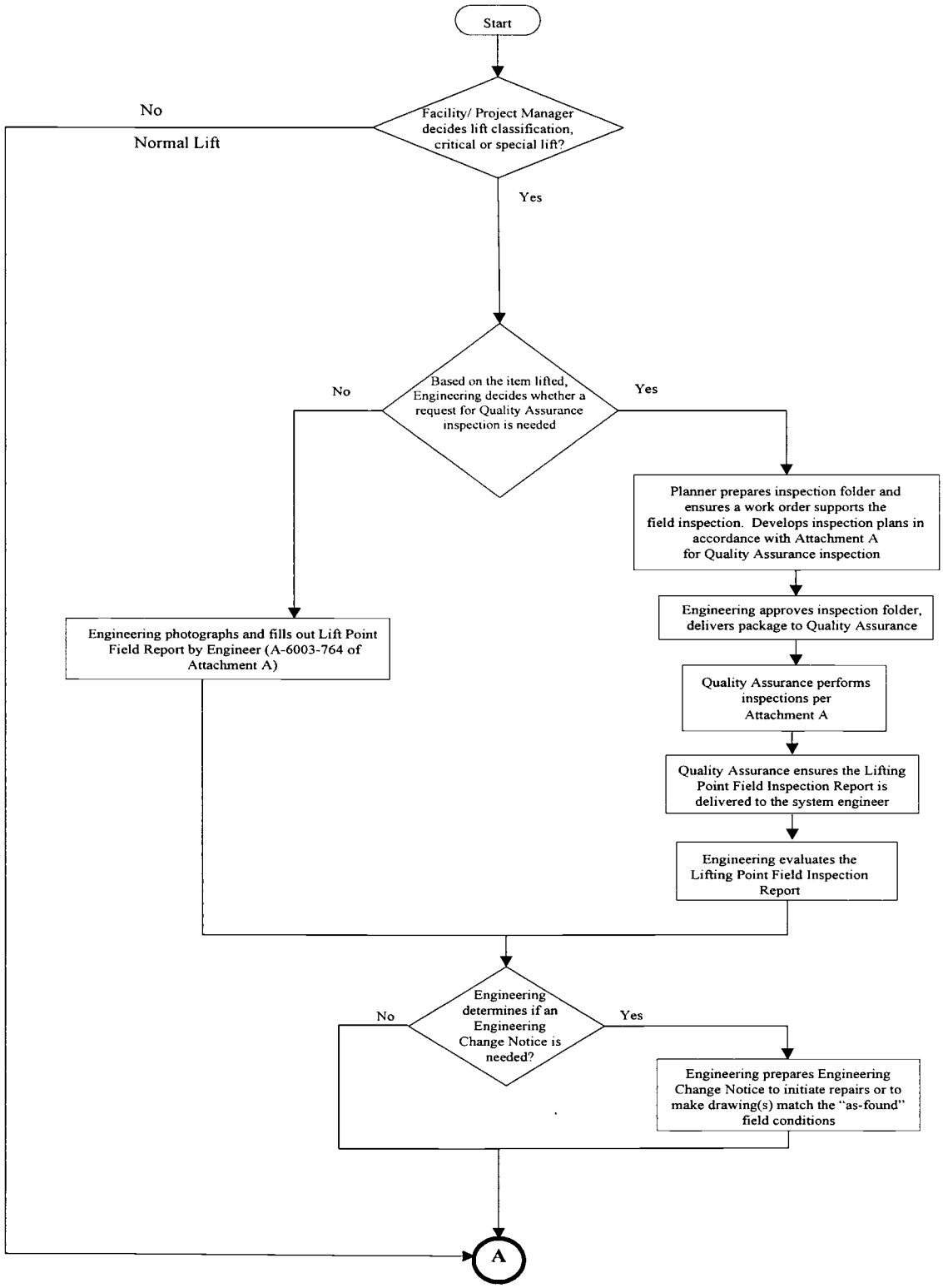


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

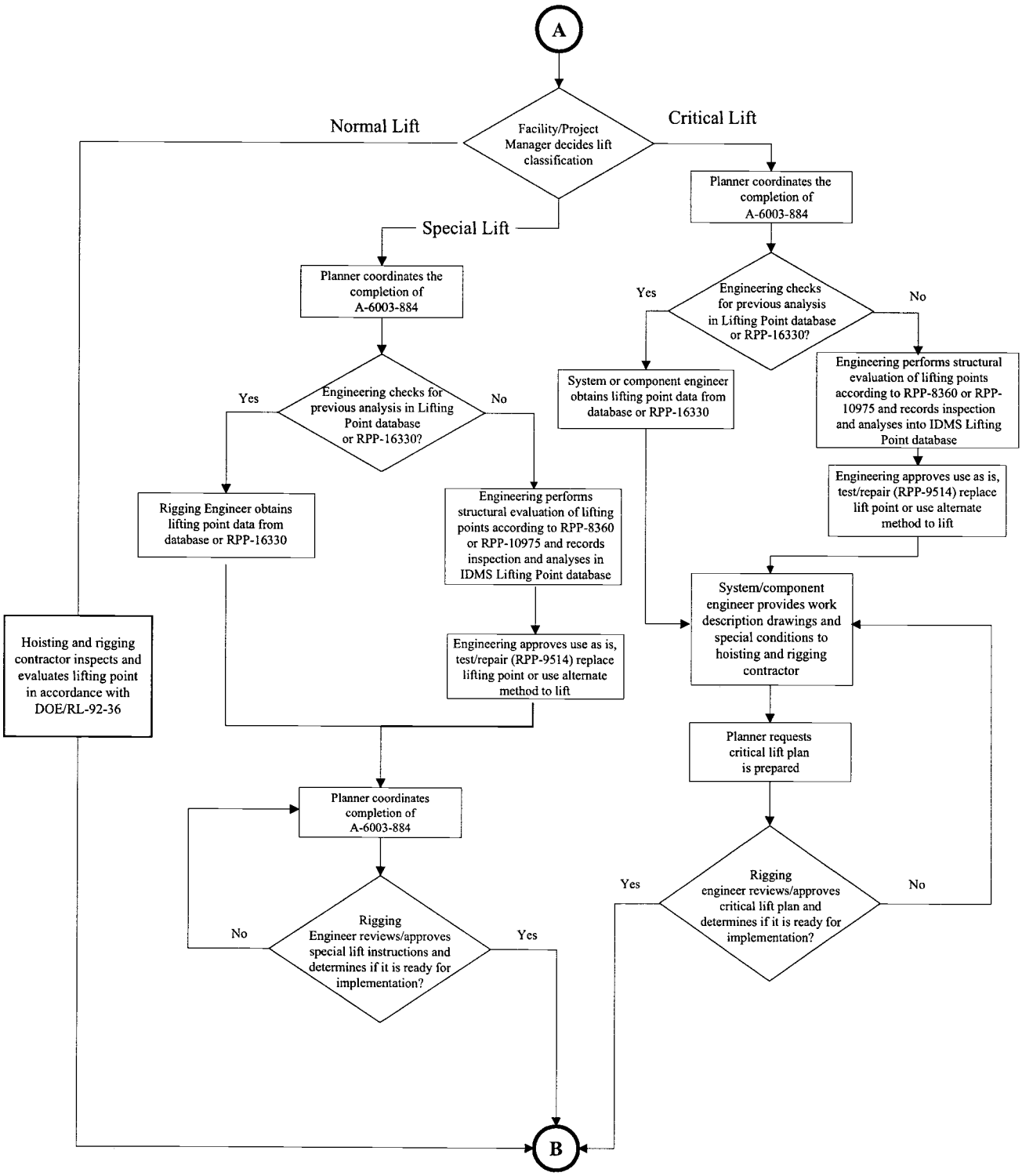


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

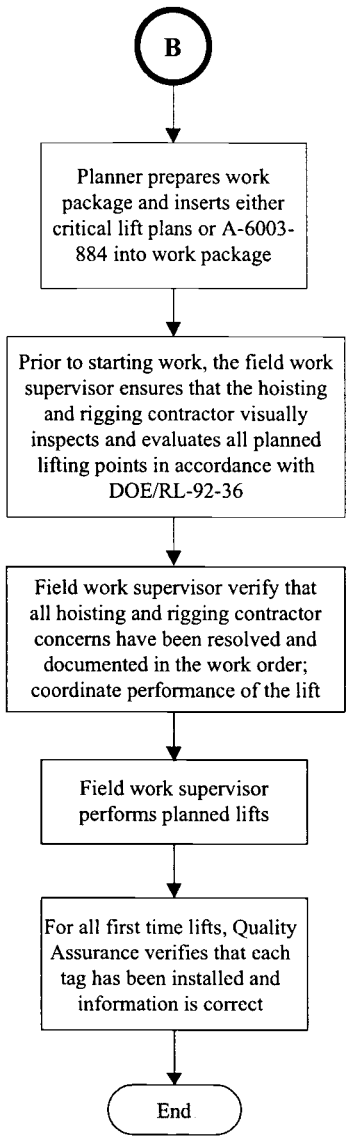
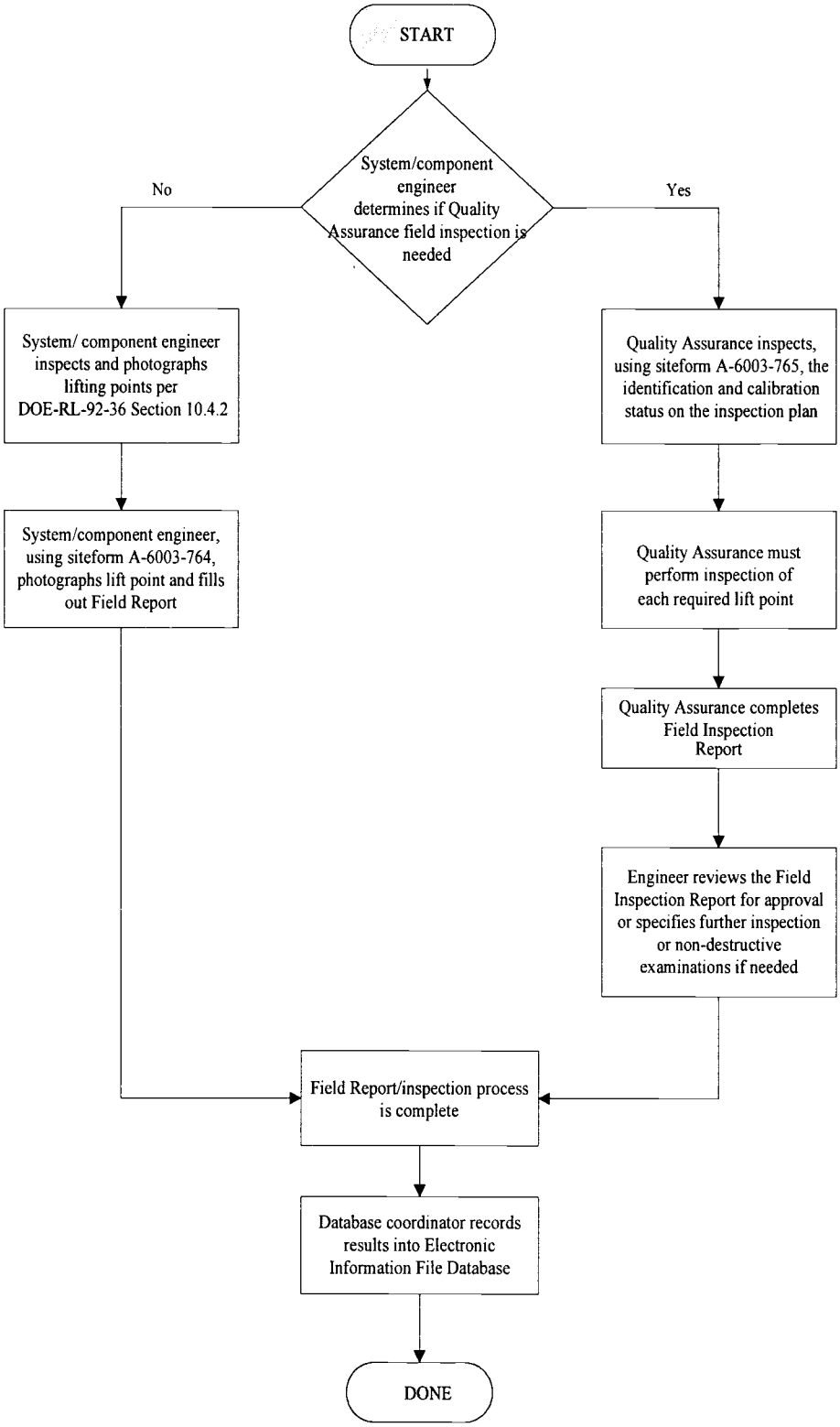


Figure 2. Inspection of Permanent Lifting Points Process.



Task# WRPS-PER-2008-0189.16

E-STARS[R] Report
Task Detail Report
07/08/2009 1413

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.16		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence of the review of WRPS construction crane operator qualifications to assure compliance with provisi		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence of the review of WRPS construction crane operator qualifications to assure compliance with provisions of DOE-RL-92-036, Hanford Site Hoisting and Rigging Manual. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of the completed review of crane operator qualifications. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/29/2009 0820 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1424 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. FW Mobile Crane Operator qualifications..rtf 6. Link to PER 7. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	Kramer, Tim F - 01/29/2009 0817
Editor	Kramer, Tim F - 01/29/2009 0818
	A review of construction crane operator qualifications identified administrative errors in ITEM regarding crane class designation changes to DOE-RL-92-36 made in July 2007. The necessary corrections were made and all current crane operator qualifications verified to be accurate. ITEM information contained in attachment.

Task# WRPS-PER-2008-0189.16			
Poster	Gaydosh, William L - 01/29/2009 1424		
	Concur		
	I reviewed th a corrective actions and they adequate to tclose this items. B. Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0802		
	CLOSED		
	Reviewed and closed. tls 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

From: Davis, Steven A
Sent: Tuesday, January 13, 2009 2:29 PM
To: Lesko, Karen F; Kramer, Timothy F
Cc: Keith, Lloyd J
Subject: FW: Mobile Crane Operator qualifications are still in question.

Attachments: Picture (Device Independent Bitmap); Picture (Device Independent Bitmap); Picture (Device Independent Bitmap); Picture (Device Independent Bitmap)

They have finally corrected the errors we discovered concerning the qualification of Class 3 and 4 Mobile Crane Operators due to the definition change to the Site Hoisting and Rigging manual in July 2007.

Administrative actions that Fluor Hanford needed to perform to correct the situation.

1. Give Class 3 (044623) credit to those that completed Class 4 (044624) prior to July 2007.

2. Then remove all of the Crane Operators from the Class 4 (044624) listing that completed it prior to July 2007.

These actions have been completed.

New Class 3 Mobile Crane Qualification List with those given credit highlighted in green.

ITEM011 Current Completed Courses 1/13/2009 2:04:52 PM

Company: All Hanford Page: 1

Course: 044623 CLASS 3 MOBILE CRANE OPER QUAL

Retrain Course: 044623

*** This report does not include replacement courses ***

Attention: Do not run this report for course 031220-40 HOUR HAZ WASTE SITE WORKER.
Please use the Crystal Report, Course on Trng Plan with dates.rpt which is
located in the shared area \\Hanford\Data\Sitedata\TrainingSystems\ITEM Re

Hanford ID	Employee Name	Course Taken	Date Taken	Date Needed	Course Sched	Date Scheduled
0026962	Andrews,Donald James	044623	10/31/2006	10/31/2009		
0013800	Brown,Dennis R	044623	05/19/2008	05/19/2011		
1144459	Chaney,Paul Eugene	044623	03/05/2007	03/05/2010		
0029954	Clancy,James S	044623	06/25/2008	06/25/2011		
3310168	**Decola,Antone C**	**044623**	**04/25/2007**	**04/25/2010**		
3786762	Egeland,Richard Riley	044623	03/05/2007	03/05/2010		
0004424	Flowers,Kenneth L	044623	10/24/2008	10/24/2011		
0067828	**Freed Jr,Galen Treavor**	**044623**	**07/17/2006**	**07/17/2009**		
0042666	Hand,Dwight W	044623	10/11/2006	10/11/2009		
0034133	Holbrook,Gary F	044623	07/07/2008	07/07/2011		
8476479	Krisher,Cody K	044623	04/30/2008	04/30/2011		
0038650	Lanouette Jr,Lowell K	044623	10/24/2008	10/24/2011		
0071006	Lohman,Lonnie Everett	044623	06/06/2008	06/06/2011		
0001041	Lotze,Brian Frederick	044623	02/25/2008	02/25/2011		
0087098	Morgan,Monty R	044623	11/24/2008	11/24/2011		
0056559	Norris,Kyle Edward	044623	01/15/2008	01/15/2011		
0251820	**Otterson,Jeffery Allen**	**044623**	**11/10/2006**	**11/10/2009**		
0023505	Parish,VIctor C	044623	11/24/2008	11/24/2011		
0102167	Pearson,Jason O	044623	10/20/2008	10/20/2011		
0038951	Sanders,Gary T	044623	11/19/2007	11/19/2010		
8453242	Stillings,Gerald W	044623	10/24/2008	10/24/2011		
0034534	**Sweeney,Kenneth Gerald**	**044623**	**04/02/2007**	**04/02/2010**		

Current Class 4 Qualification List

ITEM011 Current Completed Courses 1/13/2009 2:05:39 PM

Company: All Hanford Page: 1

Course: 044624 CLASS 4 MOBILE CRANE OPER QUAL

Retrain Course: 044624

*** This report does not include replacement courses ***

Attention: Do not run this report for course 031220-40 HOUR HAZ WASTE SITE WORKER. Please use the Crystal Report, Course on Trng Plan with dates.rpt which i located in the shared area \\Hanford\Data\Sitedata\TrainingSystems\ITEM R

Hanford ID	Employee Name	Course Taken	Date Taken	Date Needed	Course Sched	Date Scheduled
4548135	Barnes,Cleve R	044624	12/07/2007	12/07/2010		
0013800	Brown,Dennis R	044624	05/19/2008	05/19/2011		
0029954	Clancy,James S	044624	06/25/2008	06/25/2011		
4082268	Derickson,Glen W	044624	04/22/2008	04/22/2011		
0004424	Flowers,Kenneth L	044624	10/24/2008	10/24/2011		
0042666	Hand,Dwight W	044624	10/23/2008	10/23/2011		
0004946	Heitzman,Jerry L	044624	07/24/2008	07/24/2011		
0034133	Holbrook,Gary F	044624	01/07/2008	01/07/2011		
0078010	Hooks,John Denver	044624	12/12/2007	12/12/2010		
0102330	Kohne,Karl R	044624	10/09/2007	10/09/2010		
8476479	Krisher,Cody K	044624	05/19/2008	05/19/2011		
0038650	Lanouette Jr,Lowell K	044624	10/23/2008	10/23/2011		
0001041	Lotze,Brian Frederick	044624	03/04/2008	03/04/2011		
0087098	Morgan,Monty R	044624	06/25/2008	06/25/2011		
0056559	Norris,Kyle Edward	044624	01/15/2008	01/15/2011		
0023505	Parish,VIctor C	044624	11/24/2008	11/24/2011		
0102167	Pearson,Jason O	044624	12/07/2007	12/07/2010		
0038951	Sanders,Gary T	044624	11/19/2007	11/19/2010		
8453242	Stillings,Gerald W	044624	10/24/2008	10/24/2011		

Original Class 4 list at time of discovery

ITEM011 Current Completed Courses 11/25/2008 12:23:33 PM

Company: All Hanford Page: 1

Course: 044624 CLASS 4 MOBILE CRANE OPER QUAL

Retrain Course: 044624

*** This report does not include replacement courses ***

Attention: Do not run this report for course 031220-40 HOUR HAZ WASTE SITE WORKER. Please use the Crystal Report, Course on Trng Plan with dates.rpt which i located in the shared area \\Hanford\Data\Sitedata\TrainingSystems\ITEM R

Hanford ID	Employee Name	Course Taken	Date Taken	Date Needed	Course Sched	Date Scheduled
4548135	Barnes,Cleve R	044624	12/07/2007	12/07/2010		
0013800	Brown,Dennis R	044624	05/19/2008	05/19/2011		
0029954	Clancy,James S	044624	06/25/2008	06/25/2011		
3310168	**Decola,Antone C**	**044624**	**04/25/2007**	**04/25/2010**		
4082268	Derickson,Glen W	044624	04/22/2008	04/22/2011		
0004424	Flowers,Kenneth L	044624	10/24/2008	10/24/2011		
0067828	**Freed Jr,Galen Treavor**	**044624**	**07/17/2006**	**07/17/2009**		
0042666	Hand,Dwight W	044624	10/23/2008	10/23/2011		
0004946	Heitzman,Jerry L	044624	07/24/2008	07/24/2011		
0034133	Holbrook,Gary F	044624	01/07/2008	01/07/2011		
0078010	Hooks,John Denver	044624	12/12/2007	12/12/2010		
0102330	Kohne,Karl R	044624	10/09/2007	10/09/2010		
8476479	Krisher,Cody K	044624	05/19/2008	05/19/2011		
0038650	Lanouette Jr,Lowell K	044624	10/23/2008	10/23/2011		
0001041	Lotze,Brian F	044624	03/04/2008	03/04/2011		
0087098	Morgan,Monty R	044624	06/25/2008	06/25/2011		
0056559	Norris,Kyle Edward	044624	01/15/2008	01/15/2011		
0251820	**Otterson,Jeffery Allen**	**044624**	**11/10/2006**	**11/10/2009**		
0023505	**Parish,VIctor C**	**044624**	**12/01/2005**	**12/01/2008**		
0102167	Pearson,Jason O	044624	12/07/2007	12/07/2010		
0038951	Sanders,Gary T	044624	11/19/2007	11/19/2010		
8453242	Stillings,Gerald W	044624	10/24/2008	10/24/2011		
0034534	**Sweeney,Kenneth Gerald**	**044624**	**04/02/2007**	**04/02/2010**		

Qualified under old M
Crane Class definition

From: Akers, Bret M
Sent: Tuesday, January 13, 2009 1:42 PM
To: Davis, Steven A
Cc: Gamin, James E
Subject: FW: Mobile Crane Operator qualifications are still in question.

Steve,

The issues addressed in your original message below have been resolved per your recommendation.

Bret

From: Gamin, James E
Sent: Wednesday, January 07, 2009 3:12 PM
To: Akers, Bret M; Stape, Christopher J
Subject: FW: Mobile Crane Operator qualifications are still in question.

From: Kramer, Timothy F
Sent: Wednesday, January 07, 2009 2:34 PM
To: Davis, Steven A
Cc: Gamin, James E
Subject: FW: Mobile Crane Operator qualifications are still in question.

Steve.....we just need confirmation that this has been fixed to close the PER. It's due next week.

Thanks,
Tim

From: Davis, Steven A
Sent: Tuesday, December 23, 2008 12:21 PM
To: Gamin, James E
Cc: Stape, Christopher J; Morgan, Dana L; Keith, Lloyd J; Kramer, Timothy F; Butler, Ralph E; Aldridge, Patricia K
Subject: Mobile Crane Operator qualifications are still in question.

Thanks Jim for taking care of Otterson. But the condition still remains the same for a couple on the list. They need to be given credit for the Class 3 Mobile Crane. Then all of the Class 4 Mobile Crane Operators with a date prior to the July 2007 change need to be removed from the Class 4 list. They are not qualified to operate the currently defined Class 4 Mobile Cranes.

We have an internal corrective action (PER) to clean this up so it will not go away.

We'd appreciate it if these administrative actions could be completed before the new year.

Thanks

Steve

ITEM011 Current Completed Courses 12/23/2008 11:49:04 AM

Company: All Hanford Page: 1

Course: 044624 CLASS 4 MOBILE CRANE OPER QUAL

Retrain Course: 044624

*** This report does not include replacement courses ***

Attention: Do not run this report for course 031220-40 HOUR HAZ WASTE SITE WORKER. Please use the Crystal Report, Course on Trng Plan with dates.rpt which i located in the shared area \\Hanford\Data\Sitedata\TrainingSystems\ITEM R

Hanford ID	Employee Name	Course Taken	Date Taken	Date Needed	Course Sched	Date Scheduled
4548135	Barnes,Cleve R	044624	12/07/2007	12/07/2010		
0013800	Brown,Dennis R	044624	05/19/2008	05/19/2011		
0029954	Clancy,James S	044624	06/25/2008	06/25/2011		
3310168	Decola,Antone C	044624	04/25/2007	04/25/2010		
4082268	Derickson,Glen W	044624	04/22/2008	04/22/2011		
0004424	Flowers,Kenneth L	044624	10/24/2008	10/24/2011		
0067828	Freed Jr,Galen Treavor	044624	07/17/2006	07/17/2009		
0042666	Hand,Dwight W	044624	10/23/2008	10/23/2011		
0004946	Heitzman,Jerry L	044624	07/24/2008	07/24/2011		
0034133	Holbrook,Gary F	044624	01/07/2008	01/07/2011		
0078010	Hooks,John Denver	044624	12/12/2007	12/12/2010		
0102330	Kohne,Karl R	044624	10/09/2007	10/09/2010		
8476479	Krisher,Cody K	044624	05/19/2008	05/19/2011		
0038650	Lanouette Jr,Lowell K	044624	10/23/2008	10/23/2011		
0001041	Lotze,Brian F	044624	03/04/2008	03/04/2011		
0087098	Morgan,Monty R	044624	06/25/2008	06/25/2011		
0056559	Norris,Kyle Edward	044624	01/15/2008	01/15/2011		
0251820	Otterson,Jeffery Allen	044624	11/10/2006	11/10/2009		
0023505	Parish,VIctor C	044624	11/24/2008	11/24/2011		
0102167	Pearson,Jason O	044624	12/07/2007	12/07/2010		
0038951	Sanders,Gary T	044624	11/19/2007	11/19/2010		
8453242	Stillings,Gerald W	044624	10/24/2008	10/24/2011		
0034534	Sweeney,Kenneth Gerald	044624	04/02/2007	04/02/2010		

Decola and Sweeney need given credit for 044623 (Cla Mobile Crane) and all of the highlighted ones need to be removed from this Class 4 li

-----Original Message-----
From: Davis, Steven A
Sent: Tuesday, December 02, 2008 3:26 PM
To: Gamin, James E
Cc: Stape, Christopher J; Morgan, Dana L; Keith, Lloyd J; Kramer, Timothy F; Butler, Ralph E
Subject: Class 3 Mobile Crane Equivalency for Otterson

Jim,

Could you please approve this equivalency. I talked this over with Dana and He concurs.

I'm only taking care of this one individual on the identified lists because we need to get him cleared to work. The others on the list also need to be processed because this was a site program oversight.

Thanks

Steve

Task# WRPS-PER-2008-0189.17

E-STARS[R] Report
Task Detail Report
07/08/2009 1417

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.17		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that subcontractor crane operators have been briefed on Load Moment Indicator (LMI) error codes an		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 02/02/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that subcontractor crane operators have been briefed on Load Moment Indicator (LMI) error codes and expected responses. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of the briefing materials and rosters of personnel. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/30/2009 1452 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/30/2009 1522 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. CCR-LMI Codes Limits.pdf 6. Link to PER 7. Operating Errors.pdf 8. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	Kramer, Tim F - 01/30/2009 1451
	At the time this action was initiated there was only one construction crane operator on board and he was briefed (roster attached). Additional FH action to place the applicable information in the crane operator cabs has also been completed and additional construction subcontractor crane operators have accessed the information.

Task# WRPS-PER-2008-0189.17

	CC-CA-03 of the corrective action plan will address additional training needs as determined by the FH training evaluation and continuing WRPS subcontractor crane operator training.		
Poster	Gaydosh, William L - 01/30/2009 1522		
	Concur		
	I reviewed the actions taken and concur that this item is complete. B. Gaydosh 1.30.09		
Poster	^PER CAs (Steelman, Tracy L) - 02/02/2009 1238		
	CLOSED		
	Reviewed and closed. tls 2/2/09		
Poster	^PER CAs (Steelman, Tracy L) - 02/02/2009 1353		
	Task Re-Open		
	Re-opened to add corrected closure documentation (roster). tls 2/2/09		
Poster	^PER CAs (Steelman, Tracy L) - 02/02/2009 1355		
	CLOSED		
	Reviewed and closed. tlp 2/2/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

COURSE COMPLETION ROSTER

Course No.	Course Title	Date Completed
	Temporary Effects on Hydraulic Cylinders Crane Functional Checks - LMI Codes Limits	2-2-09
Session No. *Records Use Only*	**Location** 200 E ALL CRAFTS TRAILER	**Beginning Date/Time** 2-2-09

Records Use Only

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
1. PRINT NAME IN FORMAT LAST, FIRST, MI (UNLESS NAME IS ALREADY PROVIDED).
2. SIGN NAME IN PERMANENT INK AND PROVIDE REQUESTED INFORMATION.
3. IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.

Billing Info
☐ BILLABLE CLASS
☐ NON-BILLABLE CLASS

	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1	0251820	Otterson Jeff A	Jeff Otterson	Intermech		
2	0001041	Lotze BRIAN	B Lotze	"		
3	0071006	Lohman, Lonnie	Lonnie Lohman	"		
4						
5						
6						
7						
8						
9		PEB 2-2-09				
10						
11						
12						
13						
14						
15						
16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Ralph Butler /	2-2-09 / B1 41		2

COMMENTS:

NOTE: Original briefings were completed in November 2008 and January 2009 PEB 2-2-09

UNUSED BLOCKS ON COMPLETED FORM NEED NOT BE MARKED N/A OR LINED OUT.

*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).

DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60

OFFICIAL USE ONLY

A-6001-541 (REV 2)

75 TON – 90 TON CRANES

8.3 OPERATING ERRORS

Malfunctions in the system which are caused by range exceeding or operating errors by the crane operator himself are indicated on the display together with an explanation. These error codes are E01, E02, E03, E04, E05, E18 and E83 and they can normally be eliminated by the crane operator himself.

Error Code	Cause	Elimination
E01	Fallen below the minimum radius or above the angle given in the load capacity chart due to luffing up the boom too far.	Boom down to a radius or angle given in the load capacity chart.
E02	The maximum radius or minimum angle given in the load capacity chart was exceeded due to luffing down the boom too far.	Boom up to a radius or angle given in the load capacity chart.
E03	Boom position is out of the permissible working area (over front).	Move boom back to the permissible working area. See lifting diagram in the load capacity charts.
E04	Operating mode switch in the console incorrectly set.	Correctly set operating mode switch to the code assigned to the operating mode of the crane.
	Operating mode is not permissible with the actual crane configuration, boom position or area definition.	Be sure crane is set up according to proper operating configurations.
E05	Boom was telescoped too far or not far enough, you may only operate up to a certain maximum or minimum boom length or with load curves for boom extension where you have to telescope the main boom to a certain length.	Telescope boom to correct length, given in the load capacity chart.
	Length sensor adjustment changed i.e. length sensor cable slid off the length sensor drum.	For elimination refer to service manual.
E18	Front outrigger overloaded	Refer to load capacity charts.
E83	The Center Mid is not on its fully extended position while the OM/Fly is not completely retracted.	▪ Extend the Center Mid ▪ Retract the OM/Fly ▪ Check the OM/Fly switch (dig. input 4)
flashing ...% (tele.)	Telescope is out of the permissible sequence.	▪ Fully retract telescope
ECO	Prohibited area Boom is about to collide with the engine hood, switch off	Move boom to permitted area

Error Code	Cause	Elimination
EC1	Approaching prohibited area Boom is about to collide with the engine hood, prewarning	Move boom to permitted area

Task# WRPS-PER-2008-0189.18

E-STARS[R] Report
Task Detail Report
07/08/2009 1424

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.18		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, was modified to require that any reconfi		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 02/02/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, was modified to require that any reconfiguration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen be a designated representative of the equipment custodial company/organization. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of TFC-ENG-FACSUP-C-25, CH2M HILL Hoisting and Rigging, modified to require that any reconfiguraiton of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen by a designated representative of the equipment custodial company/organization. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/30/2009 1248 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/30/2009 1305 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. C-25reconADCA.xdf 5. Causal Team Charter WRPS-0800028-0810100014[1].pdf 6. Link to PER 7. PER 2008-0189 CCA Final.doc 8. TFC-ENG-FACSUP-C-25,_Hoisting_and_Rigging.doc

COMMENTS

Poster	Kramer, Tim F - 01/30/2009 1246
Editor	Kramer, Tim F - 01/30/2009 1247

Task# WRPS-PER-2008-0189.18			
	ADCA and draft procedure change attached.		
Poster	Gaydosh, William L - 01/30/2009 1305		
	Concur		
	I have reviewed the changes to TFC-ENG-FACSUP-C-25 and teh changes are adequate to address this E-Stars items. B. Gaydosh 1.30.09		
Poster	^PER CAs (Steelman, Tracy L) - 02/02/2009 1237		
	CLOSED		
	Reviewed and closed. tls 2/2/00		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION

(See page 3 for form completion instructions)

1. Document Number	2. Document Title
TFC-ENG-FACSUP-C-25, REV B-4 Current Revision - To - Next Revision	HOISTING AND RIGGING

3. Document Type: (●) Procedure ( ) Standard ( ) Guidance Doc. ( ) Mgmt. Directive ( ) Policy ( ) Plan ( ) Charter

4. Type of Change: ( ) New ( ) Major Revision (●) Minor Revision ( ) Periodic Review ( ) Cancellation

5. Initiated by	6. Phone	7. Mailstop	8. Date
Tim Kramer	373-4028	S7-70	01/30/09

9. Document Owner	10. Functional Area Manager
Tom Mackey	Eric Nelson

11. Proposed Changes	12. Reason for Change
Add statement in Section 4.0 to reflect requirement in MSC crane rental agreement that any re-configuration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) be overseen by a designated representative of the equipment custodial company/organization.	Clarify requirements/expectations for equipment custodian (owner) involvement when changing crane configuration.

IMPACTED DOCUMENTS

13. Does the change impact TFC-PLN-100? ( ) Yes ( ) No If Yes, add impacted document to block 15 and initiate ADCA.

14. Does the change impact RPP-MP-003? ( ) Yes ( ) No If Yes, add impacted document to block 15 and initiate ADCA.

15. Identify all impacted documents and Document Owners, and whether an ADCA needs to be completed

Procedure Number	Procedure Title	Document Owner	ADCA (Yes/No)
N/A			

16. Training (please read):

It is the sole responsibility of the Functional Area Manager, Document Owner, or designee to determine all of the following:

- Training needs, or another method for communication, for a new or document revision (including who should receive training)
- When training/communication should be administered (before or after revision issuance)
- How training/communication should be documented (e.g., by roster).

Training/communication methods can include:

- Formal training [Contact the Training organization for assistance.]
- Tailgate meeting
- Staff meeting
- Required reading.

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION (continued)

1. Document Number	2. Document Title
TFC-ENG-FACSUP-C-25, REV B-4	HOISTING AND RIGGING
Current Revision - To - Next Revision	

REVIEWERS

17. Designated Reviewing Organizations:

☐ Assessments	☐ ISMS	☐ Quality Assurance
☐ Communications	☐ Legal	☐ Radiological Control
☐ Contracts	☐ Maintenance	☐ Safety and Health
☐ Emergency Management	☐ Operations	☐ Training
☐ Engineering	☐ PAAA	☐ Waste Management
☐ Environmental	☐ Procedures	☐ Work Planning
☐ Finance	☐ Procurement	☐ 222-S Laboratory
☐ Human Resources	☐ Projects	☐ Other _____
☐ Information Resource Management	☐ Property	☒ Not Applicable

APPROVALS

18.

TFC-PLN-100 Interpretive Authority (print and sign)/Date ☐ N/A (see Instructions)

19. USQ

○ USQ

USQ Evaluator (print and sign) & USQ Number/Date

○ USQ-CAT-EX

USQ Evaluator or Individual Designated by NS (print and sign) & USQ Number/Date

○ Out of Scope

Print Name and Sign/Date

20.

Document Owner (print and sign)/Date (Signature also verifies that all comments were resolved)

Functional Area Manager (print and sign)/Date

Procedures (print and sign)/Date

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION INSTRUCTIONS

1) Document Number and Current/Next Revisions: The current document number and current to next revision number or the new document number and revision provided by the Procedures group.

2) Document Title: The title of the document being revised or the title of the new document. (Does the title convey the intent of the document to the user?)

3) Document Type: Indicate document type by marking the appropriate box. (See TFC-PLN-80 for definitions.)

4) Type of Change: New document, a major or minor change to the existing document, periodic review, or cancellation.

5) Initiated by: Name of the person initiating the change.

6) Phone: Enter a cell phone number or office phone number where the initiator can be reached.

7) Mail Stop: The mail stop of the initiator.

8) Date: The date of submittal for the change. (This is not the implementation date or effective date of the change.)

9) Document Owner: The person assigned by the Functional Area Manager (TFC-BSM-AD-C-01, Section 3.2). See document ownership matrix on the procedures web page.

10) Functional Area Manager: The person responsible for implementation of the document (TFC-BSM-AD-C-01, Section 3.1.) See document ownership matrix on the procedures web page.

11) Proposed Changes: Clearly state changes to be made.

12) Reason for Change: Explain why the change is necessary (e.g., the process has to be modified due to a new requirement, change in organizational responsibility).

13) TFC-PLN-100: Review TFC-PLN-100 for impacts. If impacted, list TFC-PLN-100 in block 15 and initiate an ADCA to revise it per TFC-BSM-AD-C-01.

14) RPP-MP-003: Review RPP-MP-003 for impacts. If impacted, list RPP-MP-003 in block 15 and initiate an ADCA to revise it per TFC-BSM-AD-C-01.

15) Impacted Documents: Does the new document or major or minor change affect any other organizations? Does it affect any other procedures (processes) or documents in other organizations? Contact the POCs for the other organizations to ensure impacts have been identified. (Contact the Procedures organization for current POC list.) Perform a search for all references to the document being changed and list those impacted by the change. It is the document owner's responsibility to identify other impacted documents and to fill out the additional ADCAs.

16) Training or Method of Communication: Determine if a new document or document change requires formal training or whether a less formal method of communication is sufficient. Determine the audience that should receive the training/communication and when they should receive such training/communication (before or after document implementation).

17) Designated Reviewing Organizations: List organizations that should review the proposed change. See TFC-BSM-AD-C-01. Identify minimum reviewers. If no reviews are necessary, check "N/A."

18) TFC-PLN-100 Interpretive Authority/Date: Signature by IA indicates completion of review. (Check "N/A" if this revision **does not** <u>change or delete</u> an existing contract requirement implementation, and **does not** <u>add</u> such an implementation.)

19) USQ: USQ evaluator checks the "USQ" block and signs and dates and enters the USQ number when a USQ evaluation is performed. If the change is classified as "inconsequential" as defined by TFC-ENG-SB-C-03, the USQ evaluator or individual designated by Nuclear Safety checks the "USQ-CAT-EX" block, signs and dates, and enters the USQ number. If the document is listed in RPP-27195, no USQ is required; check the "Out of Scope" block and print, sign, and date.

22) Document Owner/Date: By signing, the document owner has reviewed and agrees with the ADCA and that the decisions/choices made address the change and the training necessary. (Signature also verifies that all comments were resolved.)

Functional Area Manager/Date: By signing this block, the Functional Area Manager is giving approval for the new or changed document. (See TFC-BSM-AD-C-01, Section 3.1, for responsibilities of the functional area manager.)

Procedures/Date: Final signature by Procedures prior to issuance of document.

Ownership matrix

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1.0 PURPOSE AND SCOPE

This procedure defines the process for conducting hoisting and rigging activities for WRPS. It also provides instructions for preparing hoisting and rigging instructions (e.g., critical or special lift determination (A-6003-884), critical lift plans, and special lift instructions).

This procedure defines the process to ensure the structural integrity of permanently installed lifting points.

Hoisting and Rigging activities within the scope of this procedure must comply with DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2.0 IMPLEMENTATION

The procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.1- 4.6.

4.0 PROCEDURE

1. Temperature control limits must be applied to lifting operations as follows:

   - No lifts will be performed in temperatures below 10°F (RPP-9551).
   - Rigging hardware used to perform lifts in temperatures below 30°F must have approval from the equipment manufacturer (Hanford Site Hoisting and Rigging Committee Bulletin, March 8, 2004).
   - To obtain specific temperature limitation information contact a qualified Rigging Engineer.

2. Outrigger pads must be used for all WRPS work activities requiring the use of a mobile crane. This provides greater ground stability for the crane and protection of equipment. Minimum requirements for the use of outrigger pads are as follows:

   - Minimum 2 feet square pads for 22-ton and smaller cranes
   - Minimum 3 feet square pads for cranes greater than 22-ton and up to 90-ton
   - Minimum 4 feet square pads for Grove 110-ton crane.

   The Rigging Engineer may waive the outrigger pad requirement based on review of the lift procedure or instruction, crane load charts, and RPP-CALC-25074.

3. For lifts in close tolerance situations where the potential exists for the load to be stuck, hung up, or otherwise come in undesired contact with other components or structures, the use of finer control of the load shall be employed. In such cases, a below-the-hook load indicating device (LID), manually operated chain hoist between the crane hook and the load, and/or use of radios or other means of positive communication are a few suggested methods to help meet this requirement.

4. When a mobile crane is initially set up or reconfigured (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the exact configuration, as will be used, shall be performed prior to making the actual lift or series of lifts. (Lesson Learned IB-08-048)

5. When reconfiguration of a mobile crane is required (e.g., installation or removal of jib, re-reeving wire rope, removing or installing load block/hook or headache ball, etc.) it must be performed under direct oversight from a designated representative of the custodial company/organization.

Formatted: Bullets and Numbering

4.1 General Instructions

Field Work Supervisor

1. Coordinate and supervise performance of planned lifts.

2. Verify that the hoisting and rigging contractor has inspected and evaluated all lifting points as required by DOE-RL-92-36 and that all concerns have been adequately addressed and documented in the work package. Contact a qualified Rigging Engineer for any additional lifting point concerns.

3. Verify that required tags have been installed and the information on the tags is correct.

4. Ensure all other lifting bail tags that are not in accordance with this procedure are removed.

5. Ensure pre-job briefings are performed in accordance with TFC-OPS-MAINT-C-02.

6. Ensure all lifts are performed in accordance with applicable procedures, instructions, and DOE-RL-92-36.

7. For all special lifts, ensure that form A-6003-884 is complete and all required signatures are present before performing the lift.

8. Ensure all field revisions to critical lift plans are made in accordance with DOE-RL-92-36. Field revisions to special lift plans require the approval of the Field Work Supervisor and the Rigging Engineer

9. Verify the crane load chart rating and crane capacity in the intended configuration with the DL and crane operator prior to conducting the lift. If the load being lifted is 80% or more of the crane's maximum rated capacity or 90% or more of the crane's load chart capacity then ensure a critical lift plan is used to perform the lift.

Quality Assurance

10. For first time lifts of cover blocks, ensure tags are installed on each cover block listing the following information:

    - Work order number
    - Weight of component in pounds
    - Key block (if applicable)
    - Test date.

NOTE: Tagging of any other items (cover plates, shield plugs, etc.) is at the discretion of the system/component engineer.

Designated Leader

11. Perform pre-lift and pre-job requirements in accordance with DOE-RL-92-36 and TFC-OPS-MAINT-C-02.

12. Perform all lifts as designed and approved.

13. Ensure Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is completed and approved for all special lifts prior to the lift being performed. This checklist is not required for critical lifts.

4.2 Critical and Special Lifts

Facility Manager/ Project Manager

1. Determine facility or project hoisting and rigging needs and scheduled work activities.

   A lift shall be designated critical based on the following criteria. In addition, any lift not subject to the following criteria may be designated critical as determined by the facility or project manager:

   a. Loss of control of the item being lifted would likely result in declaration of a "Site Area Emergency" or "General Emergency" as defined in the facility emergency plan or construction site emergency plan. (If the lift is not specifically addressed in a "Site Area Emergency" or "General Emergency" Emergency Action Level (EAL) and it could impact a facility or equipment containing radiological or toxicological material, consult with Nuclear Safety)

   b. The item being lifted is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility, or project operation.

   c. The cost to replace or repair the item being lifted, or the delay in operations of having the item damaged would have a negative impact on facility, organizational, or DOE budget to the extent that it would effect program commitments.

   d. The item, although non-critical, is to be lifted above or in close proximity to a critical item or component (e.g., a DST primary ventilation system).

   e. The load being lifted is 80% or more of a mobile crane's gross load chart rating (total maximum capacity of the crane) or 90% or more of the crane's load chart rating in any configuration for the maximum radius to be experienced. In this situation the radius shall be verified by actual measurement and not by the LMI alone.

   f. Two mobile cranes are lifting the load and the load share equals more than 70% of one or both crane's chart rating for the maximum radius that will be experienced.

2. If a lift is considered critical or special, complete and sign the Lift Instructions Determination form (A-6003-884).

3. Relay to the area task planner the proposed hoisting and rigging needs and requirements.

Planner

4. Coordinate development of the Critical Lift Plan or Special Lift Instructions in accordance with the guidelines set forth in the Lift Instructions Determination (A-6003-884) and this procedure.

5. As a minimum, ensure critical lift plans contain approval signatures from the following personnel:

   - Technical Approver – Qualified person having technical knowledge of the hoisting and rigging equipment, as designated by the responsible hoisting and rigging contractor
   - Qualified Rigging Engineer
   - Responsible Field Work Supervisor (FWS)
   - Qualified Occupational Safety Representative – normally a field safety representative
   - Responsible manager – normally the facility or project manager.

   Additional signatures may be added as required by the facility or project manager.

6. Include the original Critical Lift Plan as part of the work package as the implementing document for the pre-job briefing and performance of the lift(s).

7. For development of special lift instructions, coordinate completion of the Lift Instructions Determination form (A-6003-884).

Manager responsible for lift/Rigging Engineer/System Engineer

8. Complete the Lift Instructions Determination form (A-6003-884). Once completed, this form, along with any sketches and/or additional information, will serve as the Special Lift Instruction and is inserted into the work package as such.

   NOTE: Special conditions are included in the form, which is used to capture necessary information to be included in the work package, such as removing cover blocks, performing inspection, replacing cover blocks, and use of items such as spacers and spreader beams.

Planner	9.	Ensure that the completed form (A-6003-884) contains the required signatures and is delivered to the hoisting and rigging contractor for development of the critical lift plan or added directly to the work package as the special lift instruction. • Page 3 of A-6003-884, Riggers and Operators Field Verification Checklist, is required for all special lifts and must be included in the work package for those lifts. • The Riggers and Operators Field Verification Checklist is not required for critical lifts and should be discarded prior to entering A-6003-884 into the work package for critical lifts.
Critical Lift Procedure Preparer (Author)	10.	Using the completed and approved A-6003-884 form as guidance and direction, prepare the Critical Lift Plan and return it to the facility/project planner.
Planner	11.	Submit the work package for approval in accordance with TFC-OPS-MAINT-C-01.
	12.	Complete all applicable post-lift documentation. NOTE: Documentation for critical and special lifts is retained in CHAMPS/IDMS as part of the completed work package. This satisfies the applicable requirements in Section 3.7 of DOE-RL-92-36.
Rigging Engineer	13.	Ensure that critical lift plans and special lift instructions include the following statement when applicable: "Engineering has established the Recommended Not-To-Exceed Lifting Pull limit as xxxx lbs." NOTE: This applies to lifting items that may be rusted in place or otherwise potentially stuck.
	14.	For critical and special lifts, if test documentation is not available for permanently installed rigging hardware, ensure that appropriate supporting calculations, design media, inspection requirements, torque requirements, and hoisting and rigging requirements are included prior to approving the critical lift plan/special lift instructions.
	15.	Review the critical lift plan or special lift instruction and determine if it is ready for implementation. a. If it meets conditions for approval, sign and return the plan/instruction to the planner. b. If it does not meet conditions for approval, return the plan/instruction to the planner with recommendations for revision.

Safety & Health

16. Perform functions as the "responsible Safety organization" in accordance with DOE-RL-92-36.

17. Ensure subcontractor's critical lift plans and critical lifts they perform are approved by the subcontractor's internal safety organization prior to approval.

18. Review and approve by signing the Critical Lift Plan.

4.3 Lifting Point Inspection Preparation for Critical and Special Lifts

The process for verification of lifting point structural integrity is shown in Figure 1.

Lifting point inspections shall be performed using a graded approach. Cover blocks/cover plates with permanently installed lifting points shall be inspected using Section 4.6, and evaluated using RPP-8360. Shield plugs shall be inspected and evaluated as determined by the system/ component engineer. Non-analyzed shield plugs should be lifted using a spacer. Items to be lifted will be inspected and evaluated in accordance with DOE-RL-92-36 by the hoisting and rigging contractor, including lift points under multiple (stacked) cover blocks or where lifting points are difficult to access. The need for additional inspection and evaluation is at the discretion of the rigging engineer, the system engineer, or the component engineer.

NOTE: Cover blocks/cover plates that will not be lifted over tank farm structures (such as underground storage tanks, catch tanks, double-contained receiver tanks) and are not considered critical or special lifts only require inspection and evaluation by the hoisting and rigging contractor per DOE-RL-92-36.

Field Crane Coordinator

1. Ensure lift schedule is available to the system/component and hoisting and rigging engineers.

System/Component Engineer

2. Follow TFC-ENG-DESIGN-D-37; provide supporting documentation to planner, as needed.

Planner

3. Prepare a field inspection folder, if requested by the system/ component engineer, containing pertinent lifting point drawings, Engineering Change Notices (ECNs), and a blank Lifting Point Field Inspection Report for each lifting point.

4. Ensure that the work order supports the field inspection.

4.4 Field Inspection

Quality Assurance

1. If required by Engineering, perform field inspections in accordance with Section 4.6.

   a. Ensure that traceability is maintained between inspection documents and the inspected lifting point (e.g., tags).

   b. Deliver the Lifting Point Field Inspection Report to the system/component engineer.

System or Component Engineer	2.	Evaluate the field inspection report (in accordance with TFC-ENG-DESIGN-D-37), and based on findings, perform the required actions to ensure that the identified lifting points can be safely used.
Rigging Engineer	3.	Evaluate corrective actions and approve ECNs in accordance with TFC-ENG-DESIGN-D-37.

4.5 Structural Analysis

System or Component Engineer	1.	Perform structural analysis and determine lifting points in accordance with TFC-ENG-DESIGN-D-37 and provide data to planner.
Engineering Discipline Lead - Civil/Structural Discipline	2.	Determine the type of calculation required in accordance with TFC-ENG-DESIGN-C-10. A letter of appointment may be issued to identify approved alternates for this determination.
Analyst	3.	Perform structural evaluation of lifting points in accordance with TFC-ENG-DESIGN-C-10 and RPP-8360.
System or Component Engineer	4.	Based on the structural evaluation, determine if the lifting point(s) is adequate to lift the intended item (e.g., cover block, cover plate, shield plug) and verify tags are in place as applicable (see Section 4.4, step 16). a. If adequate, notify the planner and provide the planner with a copy of the analytical calculations. b. If inadequate, contact the Engineering Discipline Lead - Civil/ Structural, for a resolution (RPP-9514).
Analyst	5.	Record analysis as required by TFC-ENG-DESIGN-C-10. Document computational calculations on A-6003-884, item 9.
	6.	Record inspection report results and analysis into the Integrated Data Management System (IDMS) Lifting Point database per TFC-ENG-DESIGN-D-27.

4.6 Inspection of Existing Permanently Installed Lifting Points

This section ensures that lifting points are inspected and that the inspection findings are correctly provided in the evaluation package (see Figure 2).

NOTE: The Lifting Point Field Report (site form A-6003-764 or A-6003-765) records the observed condition of existing lifting points for comparison to lifting point design documentation and supporting calculations.

System/Component Engineer	1.	Evaluate if Quality Assurance (QA) field inspection is needed.

2. If the decision is made to not use QA field inspection, photograph the lifting point(s).

3. Document observations in Lifting Point Field Report By Engineer (A-6003-764) as well as Field Inspection Document Index (A-6003-766).

4. If a decision is made to use QA field inspection (A-6003-765), prepare inspection folder.

Quality Assurance Technician

5. If measuring and test equipment will be used in the inspection process, record the manufacturer, model, serial number, and calibration status in Section 6.0 of A-6003-765.

6. Using the documents specified by the planner in the Field Inspection Document Index (A-6003-766), perform an inspection of each lifting point e.g., cover block, cover plate, shield plug, identified.

7. To the maximum extent practicable, complete an inspection report for each lifting point.

   a. If any part of the QA inspection (A-6003-765) cannot be completed, record the reason for non-completion on the Lifting Field Inspection Report (A-6003-765) and appropriately annotate the steps that will not be completed.

   b. If corrosion is present, other than superficial surface rust, inform the system engineer.

   c. Submit the completed Lifting Point Field Inspection Report to the system/component engineer.

   NOTE: The lifting point inspection report, by itself, does not determine if a lifting point is safe to use.

System/Component Engineer

8. Review the Lifting Point Field Inspection Report for completeness and accuracy.

9. Determine if additional inspection or Non-Destructive Examination (NDE) is required and specify any additional inspection or NDE in Section 5.0 of the Lifting Point Field Inspection Report form (A-6003-769).

10. Return the Lifting Point Field Inspection Report to Quality Assurance if additional inspection or NDE is required.

    NOTE: All additional inspection and/or NDE results shall be noted and recorded on the Lifting Point Field Inspection Report.

11. Sign the Lifting Point Field Inspection Report when the report is complete, and forward the report to an analyst and put an electronic copy into IDMS.

5.0 DEFINITIONS

First time lift. Any lift performed on a cover block that does not have a weight tag installed in accordance with this procedure.

Outrigger pad. Blocking which is placed under a crane's outrigger floats to provide greater stability for the crane.

Permanently installed lifting point. Any lifting point that is a permanent part of the item to be lifted or a lift point that is left in place on the item to be lifted.

Temporary installed lifting point. Lifting points installed for specific lifts and subsequently removed. These lift points are considered rigging hardware and are addressed by DOE-RL-92-36 (e.g., temporarily installed swivel hoist rings and shouldered eye bolts).

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Work Order	Y	Y	Y	ENV-1.d8a	N/A	Planning
Hoisting and Rigging: Lift Instructions Determination form (A-6003-884)	N	N	N	ENV-1.d8a	N/A	Planning

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. HNF-SD-WM-TSR-006, "Tank Farms Technical Safety Requirements," Administrative Control 5.7, "Safety Management Programs."

2. TFC-PLN-40, "Hoisting and Rigging Safety Management Program Plan."

7.2 References

1. DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

2. Hanford Site Hoisting and Rigging Committee Hoisting and Rigging Bulletin, "Eyebolt and Swivel Hoist Ring Temperature Limitations," March 8, 2004.

3. HNF-IP-1266, "Tank Farm Operations Administrative Controls," Section 5.7, "Safety Management Programs, "Section 3.C.2K, "Hoisting and Rigging."

4. RPP-8360, "Lifting Bail Evaluation Process."

5. RPP-9551, "Qualification Test of the Bail Repair Assembly & Bail Load Testing."

6. RPP-16330, "Standard Lifting Point Rated Load Capacities."

7. RPP-CALC-25074, "Crane Outrigger Pad loads over Waste Transfer Lines."

8. TFC-BSM-IRM_DC-C-02, "Records Management."

9. TFC-ENG-DESIGN-C-06, "Engineering Change Control."

10. TFC-ENG-DESIGN-D-27, "Electronic Information Files."

11. TFC-ENG-FACSUP-C-23, "Equipment Identification and Data Management."

12. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

13. TFC-OPS-MAINT-C-02, "Pre-Job Briefings."

14. TFC-PLN-40, "Hoisting and Rigging Safety Management Program."

Figure 1. Verification of Lifting Point Structural Integrity Process.

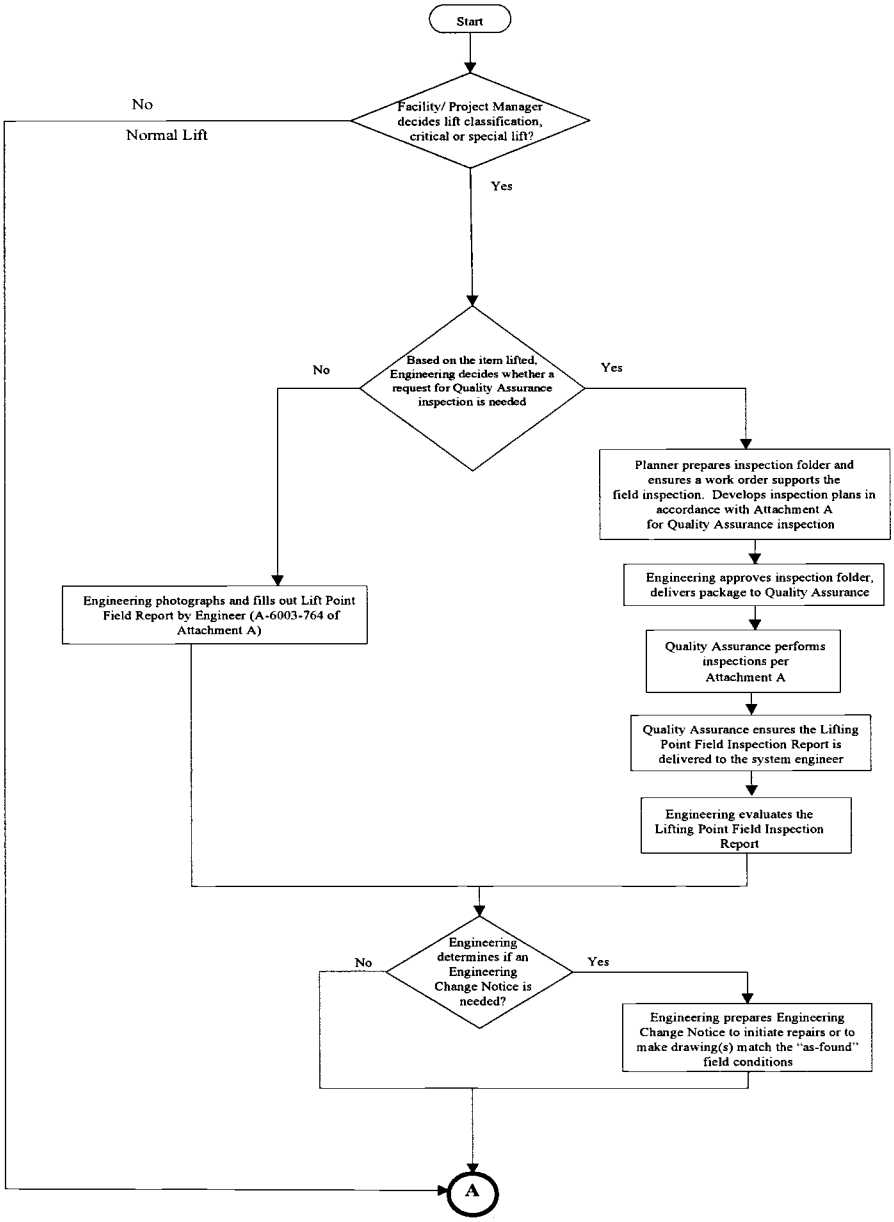


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

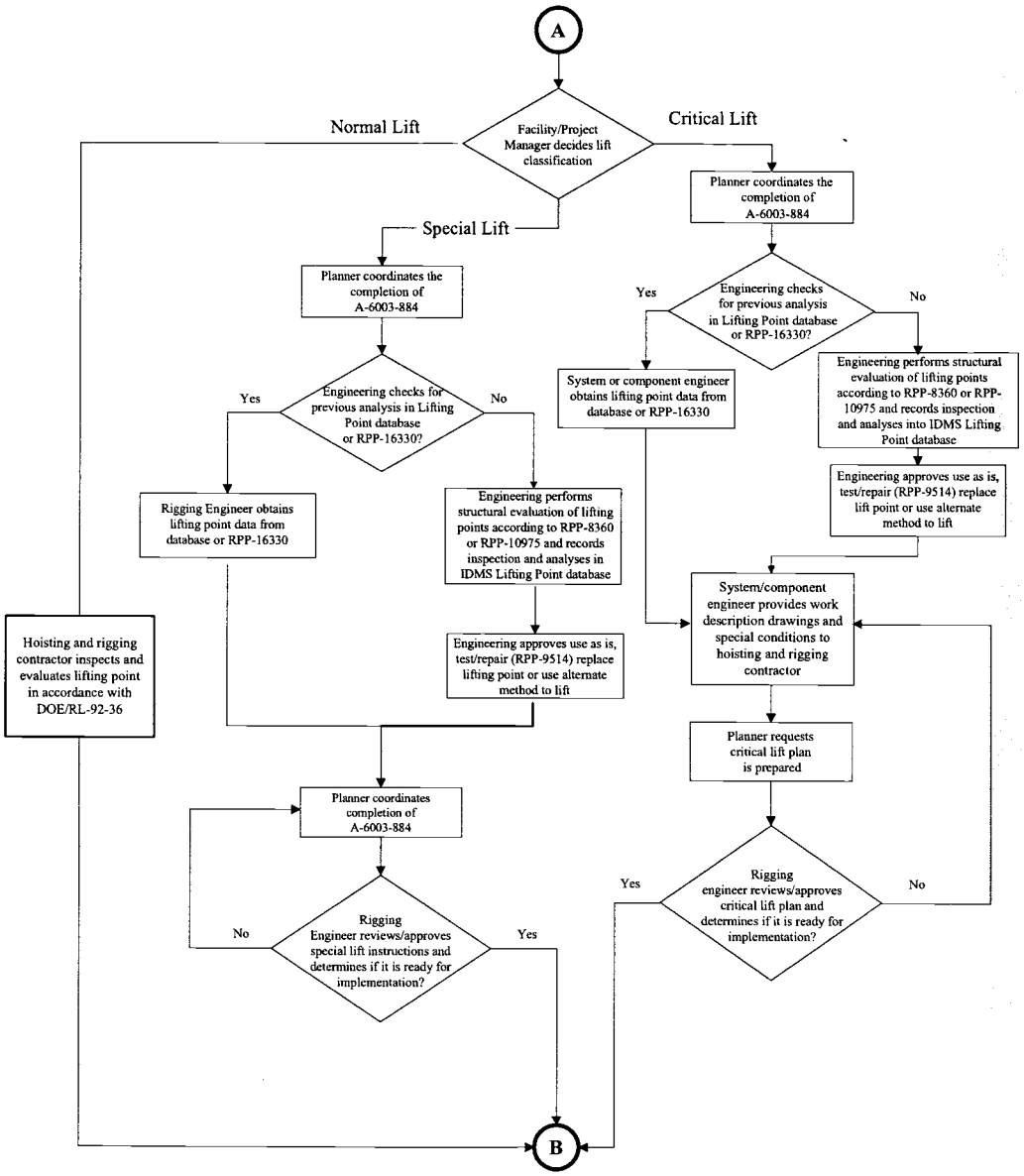


Figure 1. Verification of Lifting Point Structural Integrity Process. (cont.)

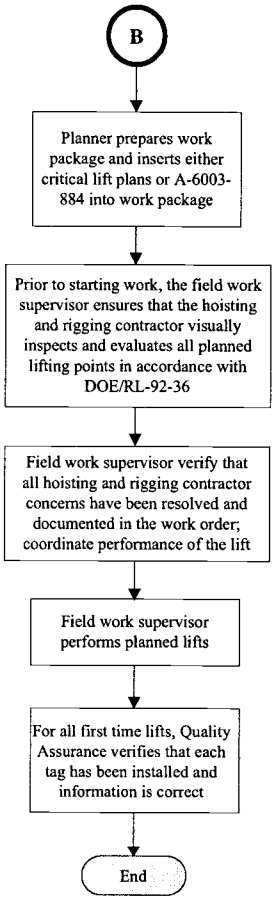
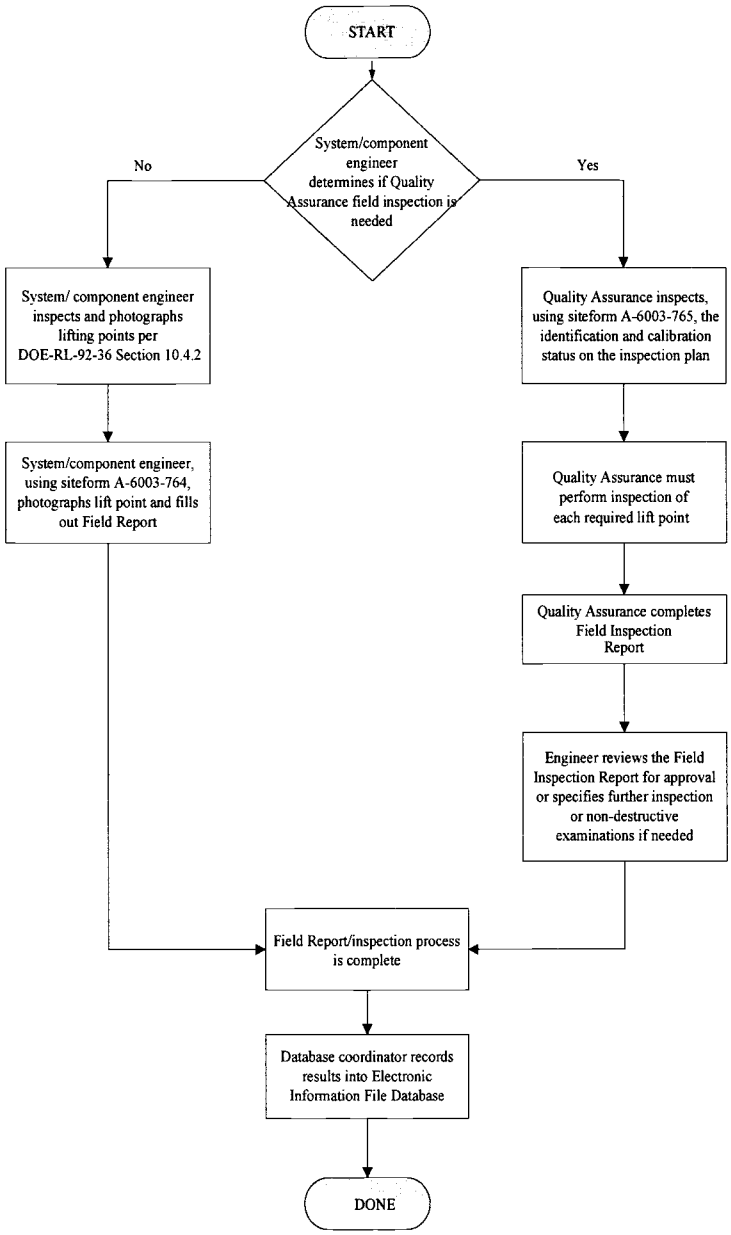


Figure 2. Inspection of Permanent Lifting Points Process.



ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION

(See page 3 for form completion instructions)

1. Current Document Number/Revision	2. Document Title
TFC-OPS-OPER-C-10, REV B-14	VEHICLE AND DOME LOAD CONTROL IN TANK FARM FACILITIES

3. Document Type: (●) Procedure ( ) Standard ( ) Guidance Doc. ( ) Mgmt. Directive ( ) Policy ( ) Plan ( ) Charter

4. Type of Change: ( ) New (●) Major Revision ( ) Minor Revision ( ) Administrative ( ) Periodic Review ( ) Cancellation

5. Initiated by	6. Phone	7. Mailstop	8. Date
T. KRAMER	373-4028	S7-70	12/29/08

9. Document Owner	10. Functional Area Manager
S. RINGO	P. OWEN

11. Proposed Changes

Revise Section 4.3 to add additional requirements for crane and other large vehicle movement inside tank farms.

NOTE 1 - Cranes and other large vehicles require more than one spotter as described in 3.c. and 3.d. below.

3.c. Mobile crane travel in tank farm hazardous facilities requires a minimum of two spotters and should be done with crane hooks restrained whenever possible. If travel must be done with a hook unrestrained at least one of the spotters must be crane signal person qualified in order to assist in crane operation (e.g., boom movement) functions as necessary.

3.d. Tractor trailers and other large vehicles (e.g., more than two axles) require a minimum of two spotters.

12. Reason for Change

Issues identified during a common cause analysis of crane events in tank farms brought attention to the need for more specific guidance regarding the use of assist personnel (spotters/signal persons) while moving cranes and other large vehicles in tank farm hazardous facilities.

IMPACTED PROCEDURES / DOCUMENTS

13. Document all impacted procedures/documents, procedure/document owners, whether ADCA needs to be completed

Procedure Number	Procedure Title	Document Owner	ADCA (Yes/No)
N/A			

TRAINING

14. Implementation Period: 12/31/08 Start Date 01/30/09 End Date [ ] Not applicable

15. Effective Date 01/30/09

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION (continued)

1. Current Document Number/Revision	2. Document Title
TFC-OPS-OPER-C-10, REV B-14	VEHICLE AND DOME LOAD CONTROL IN TANK FARM FACILITIES

16. Affected Groups/Organizations (Check all that apply)

	Affected	Training Required	Verification Required		Affected	Training Required	Verification Required
All Employees	☐	☐	☐	PAAA	☐	☐	☐
All Managers	☒	☐	☐	Procedures	☐	☐	☐
Assessments	☐	☐	☐	Procurement	☐	☐	☐
Communications	☐	☐	☐	Project Delivery	☒	☒	☒
Contracts	☐	☐	☐	Property	☐	☐	☐
Emergency Management	☐	☐	☐	Quality Assurance	☒	☒	☒
Engineering	☒	☐	☐	Radiological Control	☐	☐	☐
Environmental	☐	☐	☐	Safety & Health	☒	☒	☒
Finance	☐	☐	☐	Strategic Planning	☐	☐	☐
Human Resources	☐	☐	☐	Training	☒	☒	☒
Information Resource Management	☐	☐	☐	Waste Management	☐	☐	☐
ISMS	☐	☐	☐	Work Planning	☒	☒	☒
Legal	☐	☐	☐	222-S Laboratory	☐	☐	☐
Maintenance	☒	☒	☒	Not Applicable	☐		
Operations	☒	☒	☒				

17a. Indicate Method of Training:

- ☒ Required Reading with Verification
- ☐ Tailgate Meetings with Verification
- ☐ Staff Meetings with Verification
- ☐ Classroom Training with Verification
- ☐ Verbal Notification with Verification
- ☐ N/A

17b. Indicate Method of Informational Briefing:

- ☐ Face to Face Communication without Verification
- ☐ Verbal Notification without Verification
- ☐ Tailgate Meetings Without Verification
- ☐ Staff Meetings Without Verification
- ☐ Classroom Training without Verification
- ☐ N/A

18. Additional Training Requirements (Provide justification if training will not be conducted): ☒ N/A

REVIEW

19. Designated Reviewing Organizations:

☐ Assessments	☐ Legal	☐ Radiological Control
☐ Communications	☒ Maintenance	☒ Safety and Health
☐ Contracts	☒ Operations	☐ Strategic Planning
☐ Emergency Management	☐ PAAA	☐ Training
☒ Engineering	☐ Procedures	☐ Waste Management
☐ Environmental	☐ Procurement	☒ Work Planning
☐ Finance	☒ Project Delivery	☐ 222-S Laboratory
☐ Human Resources	☐ Property	☐ Other _____
☐ Information Resource Management	☒ Quality Assurance	☐ Not Applicable
☐ ISMS		

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION (continued)

1. Current Document Number/Revision	2. Document Title
TFC-OPS-OPER-C-10, REV B-14	VEHICLE AND DOME LOAD CONTROL IN TANK FARM FACILITIES

APPROVALS

20.

S/RID Representative (print and sign)/Date

21. USQ

- ◯ USQ
  USQ Evaluator (print and sign) & USQ Number/Date
- ◯ USQ-CAT-EX
  USQ Evaluator or Individual Designated by NS&L (print and sign) & USQ Number/Date
- ◯ Out of Scope
  Print Name and Sign/Date

22.

Document Owner (print and sign)/Date

Functional Area Manager (print and sign)/Date

Procedures (print and sign)/Date

FOR ADMINISTRATIVE CHANGES ONLY:

Procedures Manager (print and sign)/Date

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION INSTRUCTIONS

1) Current Document Number/Revision: The current document number and revision or the new document number and revision provided by the Procedures group.

2) Document Title: The title of the procedure being revised or the title of the new procedure. (Does the title convey the intent of the procedure, not to the owner, but to the user?)

3) Document Type: Indicate document type by marking the appropriate box. (See TFC-PLN-80 for definitions.)

4) Type of Change: New procedure, a major, minor or administrative change (see TFC-BSM-AD-C-01, 5.0 Definitions) to the existing procedure, periodic review, or cancellation?

5) Initiated by: Name of the person initiating the change.

6) Initiator's Phone Number: Enter either a cell phone number or office phone number where the initiator can be reached.

7) Mail Stop: The mail stop of the initiator.

8) Date: The date of submittal for the change. (This is not the implementation date or effective date of the change.)

9) Document Owner: The person assigned by the Functional Area Manager (TFC-BSM-AD-C-01, Section 3.2). See procedure ownership matrix on the procedures web page.

10) Functional Area Manager: The person responsible for implementation of the procedure (TFC-BSM-AD-C-01, Section 3.1.) See procedure ownership matrix on the procedures web page.

11) Proposed Changes: Clearly state changes to be made.

12) Reason for the Change: Explain why the change is necessary (e.g., the process has to be modified due to a new requirement, change in organizational responsibility, etc.

13) Impacted Procedures/Documents: Ask yourself: Does the new procedure or major or minor change affect any other organizations? Does it affect any other procedures (processes) or documents in other organizations? Call the POCs for the other organizations and have them help you make sure. (The POC list hotlink is available in TFC-BSM-AD-D-01.) Perform a search for all references to the procedure being changed and list those impacted by the change. This is the document owner's responsibility to identify other impacted procedures and to fill out the additional ADCAs!

14) Implementation Period: Not applicable for minor changes only. The implementation period is the time needed to complete the training on the changes and "VERIFICATION OF THE TRAINING COMPLETED" prior to the "Effective Date" of the procedure. If no implementation period is required, check "Not applicable."

15) Effective Date: The effective date of the procedure. Both the current procedure and the new procedure are shown on the intranet "Procedure page" until the effective date of the new procedure. The effective date of the procedure should not precede completion of the required training, orientation, briefing and/or socialization necessary to fully inform all affected organizations and personnel.

16) Affected Groups/Organization: Using the block 13 information, indicate the affected groups/organizations. The minimum choices should include the organization that owns the procedure, the organizations with responsibilities in the procedure and organizations/ groups/employees impacted by the change. If no one is affected, check "Not applicable."

17A, 17B) Method of Training/Briefing: Identify the method of training that will be given to affected groups/organizations/individuals. (Major revisions to a process should require (mandate) a more stringent training method that may include documented demonstration of proficiency and/or knowledge of both the process and the changes.) (See TFC-BSM-AD-C-01, Section 4.2, step 6 and Section 4.3, step 2, that discuss the document owner's responsibility to identify the training method and implementation.) Required reading is initiated by the document owner in accordance with TFC-OPS-OPER-C-33. If no training or informal briefing method is required, check "N/A."

18) Additional Training Requirements: Intended to be used to capture training that may be non-standard, unique, hands-on, etc. It is also for the document owner to provide the reason why training is not required in support of a change. (Even a minor change can set up a situation where personnel errors can occur.) If there are no additional training requirements, check "N/A."

19) Designated Reviewing Organizations: List organizations that should review the proposed change. See TFC-BSM-AD-C-01. Identify minimum reviewers. If no reviews are necessary, check "N/A."

20) S/RID Representative/Date: Signature by S/RID IA/SME indicates completion of review. If the S/RID signature is not required (not required for minor changes and guidance documents and typically not required for plans, policies, charters, and management directives), write N/A in the block.

21) USQ: USQ evaluator checks the "USQ" block and signs and dates and enters the USQ number when a USQ screening is performed. If the change is classified as "inconsequential" as defined by TFC-ENG-SB-C-03, the USQ evaluator or individual designated by NS&L checks the "USQ-CAT-EX" block, signs and dates, and enters the USQ number. If the document is listed in RPP-27195, no USQ is required; check the "Out of Scope" block and print, sign, and date.

22) Document Owner/Date: By signing, the document owner has reviewed and agrees with the ADCA and that the decisions/choices made address the change and the training necessary.

Functional Area Manager/Date: By signing this block, the Functional Area Manager is giving approval for the new or changed procedure. (See TFC-BSM-AD-C-01, Section 3.1, for responsibilities of the functional area manager.)

Procedures/Date: Final signature by Procedures prior to issuance of procedure.

Procedures Manager/Date: Final signature by Procedures Manager prior to issuance of procedure for administrative changes only.

Task# WRPS-PER-2008-0189.19

E-STARS[R] Report
Task Detail Report
07/08/2009 1426

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.19		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence that a change to TFC-OPS-OPER-C-10, Vehicle and Dome Load Control in Tank Farm Facilities, to defi		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	Provide objective evidence that a change to TFC-OPS-OPER-C-10, Vehicle and Dome Load Control in Tank Farm Facilities, to define minimum criteria for crane configuration and movement while in tank farm facilities, specifically addressing minimum number of spotters, tie-down length, and crane configuration, was initiated. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: A copy of the ADCA to modify TFC-OPS-OPER-C-10, Vehicle and Dome Load Controls in Tank Farm Facilities, to define minimum criteria for crane configuration and movement while in tank farm facilities, specifically addressing minimum number of spotters, tie-down length, and crane configuration. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Kramer, Tim F - Assign - Completed - 01/29/2009 0917 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1425 *Instructions:*	

ATTACHMENTS

Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. C-10-ADCA.pdf 5. Causal Team Charter WRPS-0800028-0810100014[1].pdf 6. Link to PER 7. PER 2008-0189 CCA Final.doc

COMMENTS

Poster	Kramer, Tim F - 01/29/2009 0917
	ADCA attached detailing changes to TFC-OPS-OPER-C-10. The ADCA has been approved and is being processed through procedured group.

Task# WRPS-PER-2008-0189.19

Poster	Gaydosh, William L - 01/29/2009 1425		
	Concur		
	I reviewed the ADCA attached to this E-Stars items detailing changes to TFC-OPS-OPER-C-10. I believe the changes to TFC-OPS-OPER-C-10 are adequate to close this items. B. Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0803		
	CLOSED		
	Reviewed and closed. tls 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0189.20

E-STARS[R] Report
Task Detail Report
07/08/2009 1427

TASK INFORMATION			
Task#	WRPS-PER-2008-0189.20		
Subject	WRPS-PER-2008-0189; SIG; Provide objective evidence of an authorization basis review of the potential impact on TOC SMPs relative to the slip stick ph		
Parent Task#	WRPS-PER-2008-0189	**Status**	CLOSED 01/30/2009
Reference	WRPS-PER-2008-0189	**Due**	02/02/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/22/2009 1143	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Inactive
	Provide objective evidence of an authorization basis review of the potential impact on TOC SMPs relative to the slip stick phenomenon. (NOTE: This action is complete but is launched to gather objective evidence documentation). Deliverable: Documentation of determination by NS&L. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Brown, Robert L - Assign - Completed with comments - 01/27/2009 1704 *Instructions:*	
	• Gaydosh, William L - Review - Concur with comments - 01/29/2009 1435 *Instructions:*	

ATTACHMENTS	
Attachments	1. 2008-0189.5-AEI-22337-OC-08-011 (HR Requirements) 12-18-08.pdf 2. 2008-0189.5-AEI-22337-OC-08-011 Response.pdf 3. 2008-0189.6-ADCA TFC-OPS-OPER-C-14.pdf 4. Causal Team Charter WRPS-0800028-0810100014[1].pdf 5. FW Grove Crane Presentation.htm 6. Link to PER 7. PER 2008-0189 CCA Final.doc

COMMENTS	
Poster	Brown, Robert L - 01/27/2009 1704
	Completed
	Communications for John Harris Attached.
Poster	Gaydosh, William L - 01/29/2009 1435
	Concur
	I reviewed the e-mail from John P. Harris III to Robert L. Brown dated 10-22-08. The event proposed has been analyzed to be "extrremely unlikley" This is a conservative assessment. B.

Task# WRPS-PER-2008-0189.20

	Gaydosh 1.29.09		
Poster	^PER CAs (Steelman, Tracy L) - 01/30/2009 0759		
	CLOSED		
	Reviewed and closed. tlp 1/30/09		
TASK DUE DATE HISTORY			
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	02/02/2009 0000
Modified	01/22/2009 1143 - ^PER CAs	**New Due Date**	10/25/2009 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

From: Harris, John P III
Sent: Wednesday, October 22, 2008 3:36 PM
To: Brown, Robert L (Radcon)
Cc: Niebuhr, Daniel P (Dan); Mackey, Thomas C; Kramer, Timothy F; Kripps, Lawrence J; Eppler, Larry L
Subject: FW: Grove Crane Presentation

Importance: High

Attachments: Grove Presentation 102008.pdf
Bob,

As a follow-up to my input to you at this morning's meeting, I've come back to talk with some of my Nuclear Safety peers to make sure that I had the right answer. They've corroborated my thoughts.

Basically, we've relied upon the analysis of folks like Tom Mackey to tell us what the frequency of a DST or 100 Series SST dome failure would be for a concentrated load, uniform load, or load drop. There are lots of hazardous conditions in the database that deal with crane failures, boom failures/drops, and/or load drops onto tanks or other aboveground or belowground structures, and the resulting releases from those events.

There's really nothing in the event we talked about this morning that's outside the bounds of the hazardous conditions we have currently in the database (as Tom Mackey expressed to us this morning, we're bounded in this event by the analysis that's already been done for drop heights and weights).

We've labeled the frequency of the dome load failure due to a load drop "extremely unlikely" (even though new analyses that Tom's done has shown that it should probably move into the "beyond extremely unlikely" realm – though we've decided to remain at EU for conservatism's sake). We've also labeled the load drops themselves (onto such things as vent filters, pits, cover blocks, etc.) as "anticipated" due to the fact that they're sometimes the result of human failure.

So, bottom line: the hazardous condition described by the "stick-slip" boom retraction (resulting from the thermal contraction of the hydraulic oil in the boom cylinders) is another initiator for the crane failures we've already postulated and is bounded by the hazardous conditions already in our hazard database. The feeling here is that we can, if you or Tom determines it to be necessary, add this hazardous condition to our database to document this.

Thanks for including me in your discussions on this. I hope that this has been helpful in your evaluation of the event.

John Harris
Nuclear Safety

From: Brown, Robert L (Radcon)
Sent: Tuesday, October 21, 2008 3:12 PM
To: Harris, John P III
Subject: FW: Grove Crane Presentation
Importance: High

See you tomorrow @ 0730 in room C-221 of 2750

From: Tucker, Ronald P
Sent: Tuesday, October 21, 2008 10:38 AM
To: Brown, Robert L (Radcon); Kramer, Timothy F; Hanson, Gregory N
Subject: FW: Grove Crane Presentation
Importance: High

More

From: Martinen, Edgar W
Sent: Tuesday, October 21, 2008 10:31 AM
To: Tucker, Ronald P
Subject: FW: Grove Crane Presentation
Importance: High

Ron, some info for PER-2008-1891. The attachment describes the issue with the 90T Crane. Am told the 75T has a similar issue. Fluor has committed to installing the Telescope Circuit Thermal Contraction Kit. No info yet on lead time. Also critique interviews of the operator and mechanic are scheduled to occur today.

Edgar

From: Martin, Loren K
Sent: Tuesday, October 21, 2008 10:17 AM
To: Martinen, Edgar W
Subject: Grove Crane Presentation
Importance: High

Edgar,

Here is the hand out which was provided in the Grove out brief
yesterday at 6293. This discussion indicates an issue with hydraulic thermal contraction and a stick – slip condition.

If you have further questions, please let me know.
Loren

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0191
Closed 04/09/2009 10:30

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0191	11/06/2008	07:00	Maintenance

Location

272AW

How Was Problem Discovered

Maintenance Activity

Description of Concern or Problem

This morning a RCT came to the Toolcrib to check out a Radeco Air Sampler. I had to turn this person away as I don't have any available, pretty embarassing for me to have to say that as I have 5 that only need minor repair (for about a year) 4 are checked out, 1 awaiting disposal. On 10/02/08, 4 that are "in" Calibration got tagged with a "Service Required" tag with a statement that says " Failed As Found Calibration". I can't issue these because of the tag.

I also have 8 Staplex's that are all "Out of Service" since 07/30/08.

My concern is now the RCT's have to go to Closure to get Samplers. I hope they have enough available. This is going to delay jobs.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification

Immediate actions Taken or Planned

Wrote this PER. Have talked and e-mailed several times to push to get this fixed to no avail.

Recommended Corrective actions

Make it a priority to fix the Samplers. We have plenty if it is scheduled to maintain this equipment.

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Haggerty, Beth A	H0085182	(509) 373-5331	11/06/2008

SHIFT OPERATIONS REVIEW

Title

Radeco Air Sampler not available

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No additional actios taken or recommended by Base Ops SO

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Strasser, David W	H0075556	(509) 373-2689	11/06/2008

SCREENING

PER Significance Level	
TUF	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	

Assigned Responsible Manager	Facilities Rep / SSO	Safety Management Rep	
Cook, Randy W			

Program		Safety Management Program	
• ^N/A^		• ^N/A^	
PER Screening Comments			
No comments (Nancy Brown 11/07/08)			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Maintenance	• Calibration - Equipment
ISMS	**Consequence Code**		
Perform work within the controls	• Calibration Standard - Calibration standard failed, expired, or otherwise LTA		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/07/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/07/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/10/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/10/08			
Instructions for Responsible Manager			
Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Owen, Annette	H0054042	(509) 372-0533	11/10/2008
Track Until Fixed (TUF)			
Action Taken			
Discussed the issue with RadCon management who stated that they should not need more than three air samplers at any one time. I informed them that they had eight checked out and they stated that they would talk to their people about getting them checked back in. In addition we have returned all of the samplers back to the RadCon group to control and we will repair and calibrate as required. David Pattee is working directly with Eric Hudspeth when repairs are needed.			
ATTACHMENTS			
Link to PER			
WRPS-PER-2008-0177 and WRPS-PER-2008-0191.msg			
AUDIT HISTORY			

Change Date	Auditor	Comments
11/10/2008 08:50	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
04/09/2009 10:45 AM

Task# WRPS-PER-2008-0191			
E-STARS[R] Report Task Detail Report 04/09/2009 1045			
TASK INFORMATION			
Task#	WRPS-PER-2008-0191		
Subject	TUF; Radeco Air Sampler not available		
Parent Task#		Status	CLOSED 04/09/2009
Reference		Due	04/13/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/06/2008 0905	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.		
	• Cook, Randy W - Assign - Completed with comments - 04/09/2009 1016 *Instructions:*		
	• Cook, Randy W - Assign - Withdrawn - 03/04/2009 1529 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
	• Cook, Randy W - Close - Closed - 04/09/2009 1017 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window. Verify the TUF Tab and close the task when complete		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Strasser, David W) - Review - Concur - 11/06/2008 1106 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/07/2008 1453 *Instructions:*		

Task# WRPS-PER-2008-0191			
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/10/2008 0850 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER 2. WRPS-PER-2008-0177 and WRPS-PER-2008-0191.msg		
COMMENTS			
Poster	^PER Coordinator (Owen, Annette) - 03/04/2009 0303		
	Extend to 4/13/09 per attached e-mail request.		
Poster	Cook, Randy W - 04/09/2009 1004		
	Completed		
	The originator agrees with the disposition of this PER.		
TASK DUE DATE HISTORY			
Modified	03/04/2009 1529 - ^PER Coordinator (Owen, Annette)	New Due Date	04/13/2009 1630
Modified	11/10/2008 0850 - ^PER Coordinator	New Due Date	03/06/2009 1630
Modified	11/10/2008 0850 - ^PER Coordinator	New Due Date	03/10/2009 1630
Modified	11/06/2008 0905 - ^PER Coordinator	New Due Date	11/08/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Message

From: Judkins, Heather
Sent: Thursday, March 20, 2008 11:01 AM
To: ^CH2M Corrective Action Group
Cc: Wright, Mark A
Subject: Extend CH2M-PER-2008-0191

PER #: CH2M-PER-2008-0191
Owner: Mark Wright
Current Due Date: 03/28/08
New Due Date: 05/22/08
Justification: We need more time to review all the work orders and the reasons why they haven't been worked before we can proceed on a path forward.

Heather Judkins

East Area Base Operations
Work Integration
Administrative Specialist
373-5450/S5-03

Message

From: Judkins, Heather
Sent: Thursday, May 22, 2008 9:35 AM
To: ^CH2M Corrective Action Group
Subject: Extension Request CH2M-PER-2008-0191

Mark Wright asked me to have you extend this PER.

CH2M-PER-2008-0191
Mark Wright
New Due Date: 06/27/08
Reason: We need more time to assign work dates to the work packages identified by the PER originator in order to close this matter.

Heather Judkins
East Area Base Operations
Work Integration
Administrative Specialist
373-5450/S5-03

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0227
Closed 11/12/2008 11:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0227	11/05/2008	14:30	Other

Location

OTHER

How Was Problem Discovered

Field Observation

Description of Concern or Problem

Chemical Exposure Concern at the HAMMER Radiological Training Building
An employee became nauseous from an odor and needed to leave the building for fresh air. The building was evacuated when others complained of the odor. There was construction immediately adjacent to the training building's ventilation intake which was not protected. The construction contractor did not have a MSDS available. No air monitoring was performed due to the late hour of the day and no monitoring equipment being available. The following day a MSDS for "L&M CURE" (MSDS# 061782) was provided by the HAMMER IH. The affected employee contacted the manufacturer and obtained a data sheet. The odor described by the employees, that of very strong paint, did not match the odor description in the MSDS or data sheet. The employee was examined at AMH on 11/06/2008. AMH does not believe that L&M CURE was the source of the odor, and they are considering it as "unknown."

Requirement Not Satisfied	Source Document Number
MSDS not available at construction site	

Equipment Identification Number	System Identification
NA	Ventilation (General)

Immediate actions Taken or Planned

The employee left the building. The building was evacuated. The employees were offered an exam at AMH.

Recommended Corrective actions

Building intakes must be protected so that chemicals meant to be used in well ventilated areas are not drawn into an occupied building. HAMMER did not respond in a way so that the chemical could be identified or measured. MSDS's must be available upon request. Had a MSDS been available, the employees would have known immediately that L&M CURE was not the source of the odor.

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Juliuson, Tammy J	H0089699	(509) 373-2526	11/10/2008

SHIFT OPERATIONS REVIEW

Title

Chemical Exposure Concern at the HAMMER Radiological Training Building

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

Made proper notifications at time of event last week. No further actions recommended by BOSO

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Anderson, Rick A	H0013282	(509) 373-2689	11/10/2008

SCREENING

PER Significance Level	
Trend Only	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Brannan, Patrick (Brad)			
Program		**Safety Management Program**	
• ^N/A^		• ^N/A^	

PER Screening Comments

FURTHER EVALUATION: Contact PER originator, follow up with affected employee, and consider contacting Fluor Hanford HAMMER management.
cc: Mark Jones, Jim Rolph
(nb 11/11/08)

Causal Code

MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Radiation Protection	• Radiological Training
ISMS	**Consequence Code**		
Identify and analyze hazards	• Vapor - Other - Employee exposure to a vapor that is non-tank origin related		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/11/2008

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes	
PAAA, Non-NTS Reportable	• 10 CFR 851.22 (a)(2)(iii)	• Chemical Exposure	
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date	
Anderson, Craig E	11/11/2008	
PAAA Approver Name	**PAAA Approve Date**	
Anderson, Craig E	11/12/2008	

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

Significance change from Further Evaluation to Trend at direction of Brad Brannan (Jon Hanni). Employee was taken to AMH and returned to work with no restrictions. Hammer facility is outside the scope of WRPS. 11/12/08

Instructions for Responsible Manager

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	H0054042	(509) 372-0533	11/12/2008

ATTACHMENTS

Link to PER

AUDIT HISTORY		
Change Date	**Auditor**	**Comments**
11/12/2008 08:18	Owen, Annette	'PER Significance Level' was changed from Further Evaluation to Trend Only.

-- End of Report --
11/12/2008 11:45 AM

Task# WRPS-PER-2008-0227			
E-STARS[R] Report Task Detail Report 11/12/2008 1145			
TASK INFORMATION			
Task#	WRPS-PER-2008-0227		
Subject	Trend; Chemical Exposure Concern at the HAMMER Radiological Training Building		
Parent Task#		Status	CLOSED 11/12/2008
Reference		Due	11/12/2008
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/10/2008 1451	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Anderson, Rick A) - Review - Concur - 11/10/2008 1517 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/11/2008 1459 *Instructions:*		
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/12/2008 0820 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER		
COLLABORATION			
COMMENTS			
No Comments			
TASK DUE DATE HISTORY			
Modified	11/10/2008 1451 - ^PER Coordinator	New Due Date	11/12/2008 1630

Task# WRPS-PER-2008-0227
SUB TASK HISTORY
No Subtasks
-- end of report --

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0229
Closed 01/05/2009 13:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0229	11/10/2008	16:00	ATS/222-S

Location

222S

How Was Problem Discovered

General Observation

Description of Concern or Problem

WASP samples (Vapor Progarm Performance Samples) were recieved by Laboratory QA October 15. The samples were transfere to Analytical Project Management and entered into the LIMS Database. At the time of issuing the report it was discovered the sample Identifications in the LIMS database did not agree with the identification in the QA department records.

Requirement Not Satisfied	Source Document Number
Sample Custody and identiy was not maintained.	
Equipment Identification Number	**System Identification**

Immediate actions Taken or Planned

The data was reported using the information in the formal records system LIMS.

Recommended Corrective actions

The cause for the confusion related to the sample identification needs to be investigated and corrective actions taken to ensure there is no repeat of this problem.

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Seidel, Cary M	H0009079	(509) 373-5211	11/10/2008

SHIFT OPERATIONS REVIEW

Title

Identifications in the LIMS database did not agree with the identification in the QA department records.

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No further actions taken or recommended

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Allen, Richard (Rich) E	H0037011	(509) 373-5344	11/11/2008

SCREENING

PER Significance Level	
PER with Resolution	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Hall, Kathleen M		Alexander, Sandy K	

Program	Safety Management Program
• ^N/A^	• ^N/A^

PER Screening Comments			
PER w/ Res with informal Apparent Cause Analysis. (Nancy Brown 11/12/08)			
Causal Code			
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced		
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Analytical Chemistry	• Sample Management: Receipt
ISMS	**Consequence Code**		
Identify and analyze hazards	• Qualification Requirements Not Met - Person performed activity without meeting qualification requirements		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/12/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
PAAA, Non-NTS Reportable	• 10 CFR 830.122 (e)(1) • 10 CFR 830.122 (h)(1)	• Configuration Management	
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/12/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/13/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/13/2008			
Instructions for Responsible Manager			
Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Owen, Annette	H0054042	(509) 372-0533	11/13/2008
CAUSE ANALYSIS			
Description of Occurrence			

The WASP performance evaluation samples arrived at the 222-S laboratory on October 15, 2008 and were received by a member of the QA staff. The QA staff member recorded the tube identification number as well as the sample identification number of each tube. The tube identification number is etched on each tube—it is very small and quite difficult to read. The sample identification number is recorded on a slip of paper which is wrapped around each sample tube. A Request For Sample Analysis (RSA) was filled out by the QA staff member. On the RSA form the sample identification number as well as the tube number is recorded. This RSA paperwork was then provided to the sample custodian to log the samples into OMNILIMS. The physical samples were provided to the analyst in the laboratory for safekeeping prior to running the analysis.

A few days later the analyst set up the instrument to perform the analysis of the samples. At that time he entered the tube

number and the sample identification number into Chemstation, the GC/MS software system used for acquiring the data off the instrument. He took the numbers off the actual sample tubes, not from the OMNILIMS information. The analysis was completed, the data reviewed and uploaded into OMNILIMS. The report was then prepared and forwarded to QA for final review before sending to the Performance Evaluation agency. During the QA review of the final report it was noted that the correlation between the OMNILIMS number and the sample identification number provided with the tube was different from that recorded on the raw data for two samples.

Extent of Condition

The issue is limited to the receipt of performance evaluation samples as customer samples are already received following a process that requires verfication of data entry.

Safety Significance

There is no safety significance to this issue.

Generic Implications

Remedial Corrective Action

Set expecations for receipt of performance evaluation samples. Kathleen Hall Complete 12/16/2008 (see attached email)

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The paperwork used to log the samples into OMNILIMS was reviewed. The data entry into the LIMS matches that on the paperwork provided by QA. There is no way of verifying the information used by the analyst to develop the run log as once the piece of paper containing sample identification number is removed from the tube and the tube is placed in the desorption unit, any means of verifying the sample identification is lost.

The process used to log in WASP performance evaluations samples is different than that used to log in customer samples. Customer samples are received by a sample custodian along with the appropriate paperwork. After the sample information is entered into the LIMS it is reviewed by a Project Coordinator before the samples are released to the analytical staff. This allows a verification of the sample demographics entered into the LIMS and helps to reduce data entry errors. In addition, the analyst reviews the OMNILIMS batch list against the actual sample container ID when setting up the analysis.

The practice of the QA staff providing the paperwork on performance evaluation samples to the sample custodian and providing the actual samples to the analytical staff developed several years ago, probably due to the fact the performance evaluation samples arrive at the laboratory in the mail addressed to the QA staff rather than coming from the field and directly to a sample custodian.

The apparent cause of this issue is A4B1C01 Management Policy/Guidance/Expectations were not defined. The practice of receiving performance evaluation samples in a process different than customer samples developed several years ago and was tolerated by management. Over time the staff came to understand that this was the appropriate way to handle these samples. Unfortunately this process did not allow for a verification of the data entered into the LIMS. In addition, the analyst performing the laboratory work developed the habit of entering sample identification information into the instrument software directly from the sample container, rather than printing and using the OMNILIMS bench sheet to perform this task. Neither of these processes allows for any verification of data entry and therefore allows for human errors to occur.

Performance evaluation samples should be received following the same process as customer samples using ATS-LO-090-101, 222-S Laboratory Sample Receiving and Custodianship and ATS-310-1.25 222-S Analytical Project Process Flow. The process in these procedures will drive a verification of the data entered into OMNILIMS. In addition, the analyst should confirm the sample identification on the container with the OMNILIMS batch sheet as an additional check before any identification information is permanently removed from the sample.

ATTACHMENTS

Link to PER

WRPS_PER-2008-0229_Expectation_for_Receipt of performance evaluation samples.htm

WRPS-PER-2008-0229_originator_response.htm

AUDIT HISTORY

Change Date	Auditor	Comments
11/13/2008 09:33	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
01/07/2009 05:46 PM

Task# WRPS-PER-2008-0229			
E-STARS[R] Report Task Detail Report 01/07/2009 0546			
TASK INFORMATION			
Task#	WRPS-PER-2008-0229		
Subject	RES; Identifications in the LIMS database did not agree with the identification in the QA department records.		
Parent Task#		Status	CLOSED 01/05/2009
Reference		Due	12/29/2008
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/10/2008 1617	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.		
	• Hall, Kathleen M - Assign - Completed with comments - 12/17/2008 1519 *Instructions:*		
	• Hall, Kathleen M - Assign - Completed with comments - 12/17/2008 1520 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
	• Alexander, Sandy K - Review - Concur with comments - 12/17/2008 1609 *Instructions:* Safety Management Representative Review		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Allen, Richard (Rich) E) - Review - Concur - 11/11/2008 1222 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/12/2008 1455 *Instructions:*		

Task# WRPS-PER-2008-0229			
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/13/2008 0933 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER 2. WRPS_PER-2008-0229_Expectation_for_Receipt of performance evaluation samples.htm 3. WRPS-PER-2008-0229_originator_response.htm		
COLLABORATION			
COMMENTS			
Poster	Hall, Kathleen M - 12/17/2008 0312		
	Completed		
	Causal analysis has been completed using interview techniques. Remedial corrective actions are complete (see attachment). No additional corrective actions are needed. Originator of the PER has concurred with the resolution (see attached email).		
Poster	Hall, Kathleen M - 12/17/2008 0312		
	Completed		
	PER resolution completed. Originator concurred with resolution (see attached email).		
Poster	Alexander, Sandy K - 12/17/2008 0412		
	Concur		
	Informal apparent cause analysis was completed and entered into the PER with no additional actions identified. The PER originator has been contacted as requested. PER closure is recommended.		
Poster	^PER Coordinator (Glaman, Linda R) - 01/05/2009 0101		
	CLOSED		
	PER complete. L Glaman		
TASK DUE DATE HISTORY			
Modified	11/13/2008 0933 - ^PER Coordinator	New Due Date	12/25/2008 1630
Modified	11/13/2008 0933 - ^PER Coordinator	New Due Date	12/29/2008 1630
Modified	11/10/2008 1617 - ^PER Coordinator	New Due Date	11/12/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

From: Hall, K M (Kathleen) - CHG
Sent: Tuesday, December 16, 2008 4:31 PM
To: Clark, Glen A; Scott, Lee P; Kunkel, Jerry M; Frye, Jann M; Diaz, Leslie A; Fuller, Richard K (Keith)
Cc: Prilucik, John R; Seidel, Cary M
Subject: Receipt of performance evaluation samples

This email is to set my expectations for receipt of performance evaluation samples.

Performance evaluation samples must be received following ATS-LO-090-101, *222-S Laboratory Sample Receiving and Custodianship* and ATS-310-1.25 222-S *Analytical Project Process Flow* to allow for verification of OMNILIMS data entry. In addition the analyst must check the OMNILIMS batch sheet against the sample container ID before analysis. These steps are intended to prevent the opportunity for human error in data entry to go unresolved, which could result in incorrect reporting of data. These are the same steps that are also used for receiving customer samples.

Thanks.

Kathleen Hall
376-5029

From: Seidel, Cary M
Sent: Tuesday, December 16, 2008 8:38 PM
To: Hall, K M (Kathleen) - CHG
Subject: RE: ARe you OK with this resolution of PER 2008-0229?
This is good.

Thanks
Cary M. Seidel

From: Hall, K M (Kathleen) - CHG
Sent: Tuesday, December 16, 2008 4:40 PM
To: Seidel, Cary M
Subject: ARe you OK with this resolution of PER 2008-0229?

Thanks.

Kathleen Hall
376-5029

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0230
Closed 11/13/2008 09:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0230	11/11/2008	08:00	Human Resources

Location

All Tank Farms

How Was Problem Discovered

General Observation

Description of Concern or Problem

while reviewing old per's, employee noticed that per { 2008-0190 } was closed with out any feed back or any employee involvement like i ISMS or VPP says that is required. this seems to be a problem since the new company has taken over , is to close per's that are viewed as invalid. the VPP program is a employee program to help improve safety and give the workers a voice to improve safety and health of the worker. the procedure says to contact employee's to help solve issues or review corrective actions before closing out per's. I guess that the assigned manager can close per's by calling them invalid and know feed back given to employee.

Requirement Not Satisfied	Source Document Number
follow per procedure for employee feed-back	follow per procedure for employee feed-back
Equipment Identification Number	**System Identification**

Immediate actions Taken or Planned

per written

Recommended Corrective actions

follow the per procedure for feed back to employee's . please have a new manager assigned that will follow ISMS AND THE PER PROCEDURE. please do-not use no e-mail as a excuse for know contact before closing

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Roberson, William L L	H0002204	(509) 373-4449	11/11/2008

SHIFT OPERATIONS REVIEW

Title

Closing PERs without employee involvement

How Discovered		Agency	
self-ID prior to event			
Reportability	**SSC Operability**	**Operability Review**	**Comp Measures Req**
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No further actions recommended by BOSO

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Anderson, Rick A	H0013282	(509) 373-2689	11/11/2008

SCREENING

PER Significance Level			
Trend Only			
Independent Assessment Review	**Occurrence Report Number**	**Externally Identified**	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Brannan, Patrick (Brad)			

Program	Safety Management Program
• ^N/A^	• ^N/A^

PER Screening Comments

Brad Brannan, Base Operations Rad Con Manager, provided feedback to the PER originator about WRPS-PER-2008-0190 and WRPS-2008-0230. PER originator was satisfied about the close out of WRPS-PER-2008-0190 as Invalid due to Labor Relations issue outside the scope of the PER program. PER Originator was also in agreement that WRPS-PER-2008-0230 will be a TREND since the feedback issue has been resolved.

The PER Originator's additional issues about Operator coverage for Routines will be evaluated in WRPS-PER-2008-0188 (PIE/CIM assigned to Jerry Borrowman).

cc: David Pattee (to print out hard copy of this PER and deliver to PER Originator)
(Nancy Brown 11/12/08)

Causal Code

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other

Failed Barrier	ORPS Code	Functional Area	Work Process
	Not Applicable	Quality Assurance	• Corrective Action Management

ISMS	Consequence Code
Perform work within the controls	• Communications - Inadequate communications, roles, responsibilities

PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Brown, Nancy L	H0088797	(509) 373-0992	11/12/2008

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
PAAA, Non-NTS Reportable	• 10 CFR 830.122 (c)(3) • 10 CFR 830.122 (e)(1)	• Corrective Action Program

NTS Report Number	NTS Report Date

Repetitive / Recurrent	Programmatic	Intentional Violation / Misrepresentation
No	No	No

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date
Anderson, Craig E	11/12/2008
PAAA Approver Name	**PAAA Approve Date**
Anderson, Craig E	11/13/2008

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

None. 11/13/2008

Instructions for Responsible Manager

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	H0054042	(509) 372-0533	11/13/2008

ATTACHMENTS

Link to PER

-- End of Report --
11/13/2008 09:45 AM

Task# WRPS-PER-2008-0230			
E-STARS[R] Report Task Detail Report 11/13/2008 0945			
TASK INFORMATION			
Task#	WRPS-PER-2008-0230		
Subject	Trend; Closing PERs without employee involvement		
Parent Task#		Status	CLOSED 11/13/2008
Reference		Due	11/13/2008
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/11/2008 0849	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Anderson, Rick A) - Review - Concur - 11/11/2008 1646 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/12/2008 1504 *Instructions:*		
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/13/2008 0934 *Instructions:*		
ATTACHMENTS			
Attachments	1. Link to PER		
COLLABORATION			
COMMENTS			
No Comments			
TASK DUE DATE HISTORY			
Modified	11/11/2008 0849 - ^PER Coordinator	New Due Date	11/13/2008 1630

Task# WRPS-PER-2008-0230
SUB TASK HISTORY
No Subtasks
-- end of report --

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0235
Closed 11/21/2008 14:15

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0235	11/11/2008	08:53	ATS/222-S

Location

222S

How Was Problem Discovered

Routine Work

Description of Concern or Problem

Electrician #1 exercised his stop work authority, when electrician #2 indicated that he was not comfortable with the work proceeding.

Electrician #1 advised management that he did not have an issue with the direction of the work and believed the work was safe. His stop work was exercised due to his concern that Electrician #2 felt uncomfortable with the work proceeding. Electrician #1 indicated that he would lift his stop work as soon as electrician #2 felt comfortable with the work.

Electrician #2 was interviewed and he indicated that the exhaust damper positioning lever was not labeled open or closed. Electrician #2 indicated that he would feel comfortable with the work proceeding once the lever was label to indicate the open/close position of the damper lever.

It was agreed that labels would be made up and attached to the positioner back plate.

Electrician #1 lifted his stop work at 9:34 a.m. as the issue was resolved to his satisfaction.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification
222-S Exhaust Fan #1	Ventilation (General)

Immediate actions Taken or Planned

1. Stopped work.

2. Interviewed electricians and determined scope of issue.

Recommended Corrective actions

1. Label exhaust fan dampers to reflect open and closed position.

2. Recommend TUF assigned to Jay L. Heinemann

Originator Contact

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Heinemann, Jay L	H0084811	(509) 373-0782	11/11/2008

SHIFT OPERATIONS REVIEW

Title

Stop work issued due employee concern

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No additional actions taken or recommended

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Allen, Richard (Rich) E	H0037011	(509) 373-5344	11/12/2008

SCREENING

PER Significance Level			
TUF			
Independent Assessment Review	**Occurrence Report Number**	**Externally Identified**	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Heinemann, Jay L			
Program		**Safety Management Program**	
• ^N/A^		• ^N/A^	
PER Screening Comments			
cc: Ernie Hamm (Nancy Brown 11/13/08)			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Maintenance	• Maintenance: Preventive
ISMS	**Consequence Code**		
Identify and analyze hazards	• Stop Work Authority - Employee "Stop Work Authority" used because of actual or potential unsafe conditions.		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/13/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
PAAA, Non-NTS Reportable	• 10 CFR 830.122 (e)(2)	• Configuration Management	
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/13/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/17/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
No comments (Nancy Brown 11/17/08)			
Instructions for Responsible Manager			
Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Brown, Nancy L	H0088797	(509) 373-0992	11/17/2008

Track Until Fixed (TUF)

Action Taken
On/Off labels were prepared and attached to the damper lever assembly by the SOE. Work completed 11/18/08

ATTACHMENTS

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
11/17/2008 08:33	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L

-- End of Report --
12/01/2008 10:16 PM

Task# WRPS-PER-2008-0235

E-STARS[R] Report
Task Detail Report
12/01/2008 1016

TASK INFORMATION

Task#	WRPS-PER-2008-0235		
Subject	TUF; Stop work issued due employee concern		
Parent Task#		Status	CLOSED 11/21/2008
Reference		Due	03/15/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/11/2008 1316	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Responsible Manager	Inactive
	Review the PER and determine action required. Complete action and enter statement on TUF tab. 'Complete' the task in E-STARS and 'Close' in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	
	• Heinemann, Jay L - Assign - Completed with comments - 11/21/2008 1410 *Instructions:*	
	• Heinemann, Jay L - Close - Closed with comments - 11/21/2008 1414 *Instructions:* Verify the TUF Tab and close the task when complete	
2	Review Initial PER	Inactive
	Review New PER	
	• ^SO(Allen, Richard (Rich) E) - Review - Concur - 11/12/2008 1246 *Instructions:*	
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/13/2008 1425 *Instructions:*	
	• ^Mgr Review(Brown, Nancy L) - Review - Concur - 11/17/2008 0830 *Instructions:*	

ATTACHMENTS

Task# WRPS-PER-2008-0235			
Attachments	1. Link to PER		
COLLABORATION			
COMMENTS			
Poster	Heinemann, Jay L - 11/21/2008 0211		
	Completed		
	Action completed and documented on the TUF...		
Poster	Heinemann, Jay L - 11/21/2008 0211		
	CLOSED		
	Corrective action completed and document on the TUF.		
TASK DUE DATE HISTORY			
Modified	11/17/2008 0833 - ^PER Coordinator	New Due Date	03/11/2009 1630
Modified	11/17/2008 0833 - ^PER Coordinator	New Due Date	03/15/2009 1630
Modified	11/11/2008 1316 - ^PER Coordinator	New Due Date	11/13/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0243
Closed 01/27/2009 13:15

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0243	11/11/2008	10:30	Eavp Ops

Location

242A

How Was Problem Discovered

Field Observation

Description of Concern or Problem

During the prejob for the change out of the 242A Condenser Room breathing air CAM, the issue arose about the ventilation anomaly documented in PER-2008-0206.

Lack of confidence in the ability of the ventilation system to maintain proper flow required the crew and management to step back and assess the situation.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification

Immediate actions Taken or Planned

Work was stopped and a meeting convened. Following the outline of a in-process ALARA review, discussions about the breatin air CAM, the manual adjustment of the dampers and the necessary data for restoring confidence were outlined and assignments for actions were made.

Recommended Corrective actions

The corrective actions for the ventilation issue should be worked through PER-2008-0206 and I suggest this PER be rolled up under that. Assuring that the system is operating correctly is vital to maintaining the stable conditions in the Condenser Room and maintaining confidence in the workforce.

Originator Contact

As facility manager, I should be the POC for Engineering throughout the evaluation and planning of the corrective actions under PER-2008-0206.

Originators Name	Originators ID	Originators Phone	Date Initiated
Raven, Rebecca P	H0088913	(509) 373-6016	11/12/2008

SHIFT OPERATIONS REVIEW

Title

Stop work 242-A - condenser room ventilation issues

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

Base Ops SO logged stop work and made required notifications.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Strasser, David W	H0075556	(509) 373-2689	11/12/2008

SCREENING

PER Significance Level	
PIE/CIM	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	

Assigned	Facilities Rep / SSO	Safety Management Rep	

Responsible Manager			
Raven, Rebecca P			
Program		**Safety Management Program**	
• ^N/A^		• ^N/A^	
PER Screening Comments			
Evaluate the Stop Work concern -- see also WRPS-PER-2008-0206			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Operations	• Field Walk Down
ISMS	**Consequence Code**		
Identify and analyze hazards	• Equipment Damage/Degradation - Equipment damaged or degraded, or other adverse effect to fit, form or function • Safety Concerns - Safety concerns, suggestions, and potential safety issues • Stop Work Authority - Employee "Stop Work Authority" used because of actual or potential unsafe conditions.		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/13/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
To be rolled up under another PER.			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/13/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/17/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
No comments (Nancy Brown 11/17/08)			
Instructions for Responsible Manager			
Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/17/2008
CAUSE ANALYSIS			

Description of Occurrence

Extent of Condition

Safety Significance

Generic Implications

Remedial Corrective Action

Causal Analysis, Apparent Cause and/or Root Cause Analysis

PIE/CIM

Evaluation of PIE/CIM Initiative

The 4th floor breathing air CAM is the only breathing air CAM at the 242A facility. The facility manager will ask RadCon to make a determination with respect to this CAM's use and what contamination levels would require a breathing air CAM.

This CAM was taken out of service when the Condenser Room was posted as an RBA. Following the 2008 spring outage for the ventilation upgrade, the Condenser Room was found contaminated. At that time, the breathing air CAM was placed into service to support manned entries into the CA. The Condenser Room is a five story structure with grating for floors and there was a concern that contamination could be disturbed and become airborne.

This PER was generated to document the concern and the In-Process ALARA Review that was held.

Additionally an ORP Operational Awareness Report # 4850 was issued identifying several issues:

The process for removing or returning CAMs to service should be reviewed and strengthened as needed.
The pre-job briefing for the decontamination workers should be evaluated to determine if the actions for emergency conditions (i.e., the 4th floor CAM) were discussed at the meeting, with corrective actions taken as needed.

The necessity of the CAM on the 4th floor should be reviewed, with corrective actions taken as needed.

Lastly, the validity of closing PER-2008-0147 without actions being completed should be evaluated.

WRPS-PER-2008-0270 will address all the issues of the ORP OA and this PER so no additional actions required.

ATTACHMENTS

Link to PER

RE_ WRPS-PER-2008-0243_ Intent to roll-up into WRPS-PER-2008-0270_.msg

AUDIT HISTORY

Change Date	Auditor	Comments
11/17/2008 08:33	Brown, Nancy L	Responsible Manager Task Launched by Brown, Nancy L

-- End of Report --
01/27/2009 01:15 PM

Task# WRPS-PER-2008-0243			
E-STARS[R] Report Task Detail Report 01/27/2009 0115			
TASK INFORMATION			
Task#	WRPS-PER-2008-0243		
Subject	PIE; Stop work 242-A - condenser room ventilation issues		
Parent Task#		Status	CLOSED 01/27/2009
Reference		Due	01/11/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/12/2008 0619	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.		
	• Raven, Rebecca P - Assign - Completed with comments - 01/07/2009 0812 *Instructions:*		
	• Raven, Rebecca P - Assign - Completed with comments - 01/07/2009 0813 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Strasser, David W) - Review - Concur - 11/12/2008 1420 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/13/2008 1428 *Instructions:*		
	• ^Mgr Review(Brown, Nancy L) - Review - Concur - 11/17/2008 0832 *Instructions:*		
ATTACHMENTS			

Task# WRPS-PER-2008-0243			
Attachments	1. Link to PER 2. RE_ WRPS-PER-2008-0243_ Intent to roll-up into WRPS-PER-2008-0270_.msg		
COLLABORATION			
COMMENTS			
Poster	Raven, Rebecca P - 01/07/2009 0801		
	Completed		
	Corrective actions will be taken under WRPS-PER-2008-0270.		
Poster	Raven, Rebecca P - 01/07/2009 0801		
	Completed		
	See Comments		
Poster	^PER Coordinator (Glaman, Linda R) - 01/27/2009 0101		
	CLOSED		
	PER complete. L Glaman		
TASK DUE DATE HISTORY			
Modified	11/17/2008 0833 - ^PER Coordinator	New Due Date	01/11/2009 1630
Modified	11/17/2008 0833 - ^PER Coordinator	New Due Date	01/11/2009 1630
Modified	11/12/2008 0619 - ^PER Coordinator	New Due Date	11/14/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Message

From: Raven, Rebecca P (Bexa)
Sent: Wednesday, January 14, 2009 10:50 AM
To: Glaman, Linda
Subject: RE: WRPS-PER-2008-0243: Intent to roll-up into WRPS-PER-2008-0270?

No. 243 is just to address the stop work. I just wanted to make sure there was a link in 243 to 270 since they are related. In other words, I have to write a PER for a stop work and say what the outcome was. But 270 is more detailed if people want more info/detail, etc especially since 270 has the ORP AOR attached.

RP Raven

242-A Facility Operations Manager

509-438-2821

From: Glaman, Linda
Sent: Thursday, January 08, 2009 1:21 PM
To: Raven, Rebecca P (Bexa)
Subject: WRPS-PER-2008-0243: Intent to roll-up into WRPS-PER-2008-0270?
Importance: High

Rebecca,
Is it your intent to roll 8-0243 into 8-0270, thereby addressing all concerns of 8-0243 with the resolution of 8-0270? Currently, Rolling-up is the only method accepted to close one PER by referencing the corrective actions of another.

If so, the the correct process for doing so is as follows:
TFC-ESHQ-Q_C-C-01, Rev D7, Section 4.4.3, step 1.e. "...1) Complete PER Integration Table (Table 3) and attach electronically to the host PER and sub-tier PER's ESTARS task. 2) To change the significance level of the host PER, as appropriate, select "Decline"...[this step is not needed here]...3) To downgrade sub-tier PERs, select "Decline" on the ESTARS task and enter comments to indicate the justification for roll-up to host PER and downgrade to Trend Only.

If you wish to roll up, let me know and I'll return 8-0243 to you so you can attach the integration table and decline the PER.

Thanks...As always, please call if you have questions

Linda RB Glaman
Operations Support Specialist/CAM
376-1776/376-6249
2750E/A-208/R2-87

"The only stupid question is the one that remains unasked"

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0257
Closed 12/03/2008 13:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0257	11/13/2008	05:00	Day Ops-W

Location

S Farm

How Was Problem Discovered

General Observation

Description of Concern or Problem

There have been numerous PERs issued documenting new contamination areas in and around several tank farms, with significant issues recently identified at S Complex. Both beta/gamma and alpha contamination has been detected. The source of this contamination is currently unknown. While some of the areas have been decontaminated, there are a variety of locations that still need to be addressed:

- An area near the SY Change Trailer (PER-2008-1917)
- An area by a valve handle near the S102 Distributor Pit (PER-2008-0099)
- Three spots outside of the fenced enclosure around S102 (PER-2008-0223)
- In the gravel area south of the S Change Trailer parking lot. (PER-2008-0182)
- Spotty areas outside of the fenced S102 area (west side). (PER-2008-0163)
- An SCA area near the 252-S building.

This PER recommends that the RadCon organization develop a comprehensive plan to accurately identify the source from which this contamination is originating and affecting the problem areas and propose corrective actions for controlling this source. It is also recommended that RadCon evaluate survey frequencies at these locations as has been frequently suggested by the Health Physics Technicians in many of the recent PERs.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification
N/A	

Immediate actions Taken or Planned

Gathered survey results for referenced PERs, discussed with BO west RadCon personnel & the FH pest control/vegetation control group, added clean-up of the various locations to the Facilities tracking list, initiated this PER.

Recommended Corrective actions

Assign as a PER with Resolution to RadCon. Copy Jim Rolph.

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Ficklin, Jim	H0023103	(509) 373-3527	11/13/2008

SHIFT OPERATIONS REVIEW

Title

Numerous PERs issued documenting new contamination areas in and around several tank farms

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No additioanl actions taken or recommended by Base Ops SO

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Strasser, David W	H0075556	(509) 373-2689	11/13/2008

SCREENING

PER Significance Level			
PIE/CIM			
Independent Assessment Review	**Occurrence Report Number**	**Externally Identified**	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Hatcher, Kathy A			
Program		**Safety Management Program**	
• ^N/A^		• Interfacing Facilities	
PER Screening Comments			
cc: Brad Brannan, Jim Rolph (Nancy Brown 11/17/08)			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Radiation Protection	• Radiological Contamination Control
ISMS	**Consequence Code**		
Develop and implement hazard controls	• Contam - Legacy - Discovery of contamination from past practices or spills in soil, animal, or vegetation		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/17/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
PAAA, Non-NTS Reportable	• 10 CFR 835.1102 (a)	• RadCon Inadequate Contamination Control	
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/17/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/18/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/18/08			
Instructions for Responsible Manager			
Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**
Owen, Annette	H0054042	(509) 372-0533	11/18/2008

CAUSE ANALYSIS

Description of Occurrence

Extent of Condition

Safety Significance

Generic Implications

Remedial Corrective Action

Causal Analysis, Apparent Cause and/or Root Cause Analysis

PIE/CIM

Evaluation of PIE/CIM Initiative

The cuurent legacy issues related to contamination control problems related to biological controls has been addressed by a joint PRC, PHMC, and TOC team. There were four major issues that have been identified and the action assignment made for correction:
1. The boudaries for surveying, posting and clean-up are not clear - clear delineation of responsibility will be outlined on a site map and agreed to by all three companies. Team Lead is Kevin Ekstrom of PHMC.

2/3. The postings used for contaminated areas are not consistent between the companies and the R2A2 is not clear and consistent for surveying and posting. Team Lead is Jim Rolph of TOC

4. There is current high levels of contamination primarily from poor vegetation control in the past. A plan/schedule and support needed from each contractor is to be developed and agreed to by PRC, PHMC and TOC for clean-up of the legacy contamination as well as a plan/schedule to prevent recurrence through routine vegetation and anumal control in and out of the various fence lines. This will also include support needed from each of the companies. Team Lead is Ray Johnson.

In reagrds to the specific recommendation in this PER, the source/reason for the contamination in the areas cited in the mulitple PERs should be evaluated by Rad Con. The team has the sites and will assume they are a result of poor previous vegetation and animal control for the current planning and scheduling until told differently by TOC Rad Con. If the source/reason for the contamination is not a biological control source then TOC Rad Con should take action to clean up the contamination and resolve the source. If the area is outside the Farms then it is a PHMC issue and they too are in receipt of the list of sites.

ATTACHMENTS

Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
11/18/2008 11:28	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
12/03/2008 01:45 PM

Task# WRPS-PER-2008-0257

E-STARS[R] Report
Task Detail Report
12/03/2008 0145

TASK INFORMATION

Task#	WRPS-PER-2008-0257		
Subject	PIE; Numerous PERs issued documenting new contamination areas in and around several tank farms		
Parent Task#		Status	CLOSED 12/03/2008
Reference		Due	01/12/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/13/2008 0523	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Responsible Manager	Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.	
	• Hatcher, Kathy A - Assign - Completed with comments - 12/01/2008 0941 *Instructions:*	
	• Hatcher, Kathy A - Assign - Completed with comments - 12/01/2008 0942 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.	
2	Review Initial PER	Inactive
	Review New PER	
	• ^SO(Strasser, David W) - Review - Concur - 11/13/2008 1503 *Instructions:*	
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/17/2008 1545 *Instructions:*	
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/18/2008 1128 *Instructions:*	

ATTACHMENTS

Task# WRPS-PER-2008-0257			
Attachments	1. Link to PER		
COLLABORATION			
COMMENTS			
Poster	Hatcher, Kathy A - 11/18/2008 1211		
	The issue has been addressed by a joint PRC, PHMC, and TOC team. There were four major issues that have been identified and the action assignment made for correction: 1. The boudaries for surveying, posting and clean-up are not clear - clear delineation of responsibility will be outlined on a site map and agreed to by all three companies. Team Lead is Kevin Ekstrom of PHMC 2/3. The postings used for contaminated areas are no consitent between the companies and the R2A2 is not clear and consistent for surveying and posting. Team Lead is Jim Rolph of TOC 4. There is current high levels of contamination primarily from poor vegetation control in the past. A plan/schedule and support needed from each contractor is to be developed and agreed to by PRC, PHMC and TOC for clean-up of the legacy contamination as well as a plan/schedule to prevent recurrence through routine vegetation and anumal control in and out of the various fence lines. This will also include support needed from each of the companies. Team Lead is Ray Johnson.		
Poster	Hatcher, Kathy A - 12/01/2008 0912		
	Completed		
	The recommendation for PER (WRPS-PER-2--8-0257) was reviewed and comments provided in the PIE tab as directed.		
Poster	Hatcher, Kathy A - 12/01/2008 0912		
	Completed		
	PER (WRPS-PER-2--8-0257) recommendation was reviewed and comments added to the PIE/CIM section as directed.		
Poster	^PER Coordinator (Glaman, Linda R) - 12/03/2008 0112		
	CLOSED		
	Originator was contacted by the Responsible Manager prior to closure and agrees with the evaluation and actions taken. PER complete. L Glaman		
TASK DUE DATE HISTORY			
Modified	11/18/2008 1128 - ^PER Coordinator	New Due Date	01/12/2009 1630
Modified	11/18/2008 1128 - ^PER Coordinator	New Due Date	01/12/2009 1630

Task# WRPS-PER-2008-0257			
Modified	11/13/2008 0523 - ^PER Coordinator	New Due Date	11/15/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0258
Closed 12/29/2008 14:45

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0258	11/12/2008	10:00	Day Ops-E

Location

C Farm

How Was Problem Discovered

Field Observation

Description of Concern or Problem

ENVIORMENTAL CONTAMINATION SPREAD TO PLANTS AND ANIMALS VS LEGACY CONTAMINATION. Upper C farm including CR vault ,151- CR Diversion Box, and 152-CR Diversion Box have historical data dating back to 10/15/1969 ,12/19/1969 and many other recorded spills throughout C farm. 10/15/1969 coating waste transfer from Purex to 151 -CR Diversion Box resulted in a spill of 3560 ci. in 36000 gal. of waste recorded on the Official Radiation Occurrence Report of which I have a copy. 12/19/1969 waste transfer from B Plant to 151-CR Diversion Box resulted in a spill of 12,000 ci. in 2600 gal.. This is two examples of the worst of a long historical list of spills that have taken place in the C farm area. I have include several pictures of tumble weeds growth in upper C farm to include Cr vault and the grout area in the NW corner. Note that many of these tumble weeds are 3 ft. tall. It is apparent that no weed control growth for this area has been maintained. The problem is that the lack of weed control in these areas is the pathway to the environment. These weeds remove the contamination from the ground. After a hard freeze they break off and disperse seeds and leaves everywhere. Also rabbits and rodents feed on the weeds etc. and introduce contamination to predators. The problem is at this point it is classified as LEGACY WASTE when the real problem is that we have failed to recognize the source to control the pathway that is contaminating plants, animals, the environment, the public, as well as not protecting the personnel that work here. SEE ATTACHED PHOTOS.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification

Immediate actions Taken or Planned

Notified management.

Recommended Corrective actions

Remove tumble weeds. Maintain Zero Growth. Use historical data to identify problem areas. DOE and contractors should change how we classify all waste as LEGACY when in reality its a failure to recognize current pathways that result in new spills every year.

Originator Contact

I would like to review the the corrective actions at closure to ensure they were effective

Originators Name	Originators ID	Originators Phone	Date Initiated
Chrystal, Carrol R	H0063087	(509) 373-2526	11/13/2008

SHIFT OPERATIONS REVIEW

Title

ENVIORMENTAL CONTAMINATION SPREAD TO PLANTS AND ANIMALS VS LEGACY CONTAMINATION

How Discovered	Agency
self-ID prior to event	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No immediate BO SO actions identified.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Wallgren, Carl B	H0099480	(509) 373-2689	11/13/2008

SCREENING			
PER Significance Level			
PIE/CIM			
Independent Assessment Review	**Occurrence Report Number**	**Externally Identified**	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Brown, David W			
Program		**Safety Management Program**	
• ^N/A^		• Radiological Control	
PER Screening Comments			
No comments (Nancy Brown 11/17/08)			
Causal Code			
MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Radiation Protection	• Radiological Contamination Control
ISMS	**Consequence Code**		
Develop and implement hazard controls	• Contam - Legacy - Discovery of contamination from past practices or spills in soil, animal, or vegetation		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/17/2008
PAAA REVIEW			
PAAA Screening	**PAAA Codes**	**Function Codes**	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	
PAAA Screening Comments			
PAAA Reviewer Name	**PAAA Review Date**		
Anderson, Craig E	11/17/2008		
PAAA Approver Name	**PAAA Approve Date**		
Anderson, Craig E	11/18/2008		
SENIOR MANAGEMENT REVIEW/CONCURRENCE			
TF Operations Morning Leadership Call			
None. 11/18/08			
Instructions for Responsible Manager			
Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.			
Senior Management	**Sr Mgmt ID**	**Sr Mgmt Phone**	**Sr Mgmt Review Date**

Owen, Annette	H0054042	(509) 372-0533	11/18/2008

CAUSE ANALYSIS

Description of Occurrence

Extent of Condition

Safety Significance

Generic Implications

Remedial Corrective Action

Causal Analysis, Apparent Cause and/or Root Cause Analysis

PIE/CIM

Evaluation of PIE/CIM Initiative

A milti-company task team has been initiated to improve control of vegetation in contaminated areas across the Hanford site. As part of this task team a schedule has been generated to provide contact herbicide applications, removal of growing tumbleweeds and application of granular sterilizer herbicide in all tank farm areas and at the frequencies necessary to control weeds within these areas. (Draft schedule attached) This schedule is being reviewed by the mutli-company task team and will be approved by all three companies when review is completed. The granular sterilizer has already been applied to all tank farms in the fall of this year which is the first time in many years the material has been applied before the winter snow which should provide much improved control of germinating weeds next spring.

ATTACHMENTS

Link to PER

P1020175.JPG

P1020176.JPG

P1020177.JPG

P1020179.JPG

P1020180.JPG

P1020181.JPG

TOC Schedule Weed Control Only 12-4-08 at 120pm.pdf

AUDIT HISTORY

Change Date	Auditor	Comments
11/18/2008 11:29	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
07/07/2009 02:32 PM

Task# WRPS-PER-2008-0258			
E-STARS[R] Report Task Detail Report 01/08/2009 0215			
TASK INFORMATION			
Task#	WRPS-PER-2008-0258		
Subject	PIE; ENVIORMENTAL CONTAMINATION SPREAD TO PLANTS AND ANIMALS VS LEGACY CONTAMINATION		
Parent Task#		Status	CLOSED 12/29/2008
Reference		Due	01/12/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/13/2008 1015	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.		
	• Brown, David W - Assign - Completed with comments - 12/29/2008 0821 *Instructions:*		
	• Brown, David W - Assign - Completed with comments - 12/29/2008 0822 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Wallgren, Carl B) - Review - Concur - 11/13/2008 1949 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/17/2008 1548 *Instructions:*		
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/18/2008 1129 *Instructions:*		
ATTACHMENTS			

Task# WRPS-PER-2008-0258	
Attachments	1. Link to PER 2. P1020175.JPG 3. P1020176.JPG 4. P1020177.JPG 5. P1020179.JPG 6. P1020180.JPG 7. P1020181.JPG 8. TOC Schedule Weed Control Only 12-4-08 at 120pm.pdf
COLLABORATION	
COMMENTS	
Poster	Brown, David W - 12/29/2008 0812
	Completed
	A milti-company task team has been initiated to improve control of vegetation in contaminated areas across the Hanford site. As part of this task team a schedule has been generated to provide contact herbicide applications, removal of growing tumbleweeds and application of granular sterilizer herbicide in all tank farm areas and at the frequencies necessary to control weeds within these areas. (Draft schedule attached) This schedule is being reviewed by the mutli-company task team and will be approved by all three companies when review is completed. The granular sterilizer has already been applied to all tank farms in the fall of this year which is the first time in many years the material has been applied before the winter snow which should provide much improved control of germinating weeds next spring.
Poster	Brown, David W - 12/29/2008 0812
	Completed
	A milti-company task team has been initiated to improve control of vegetation in contaminated areas across the Hanford site. As part of this task team a schedule has been generated to provide contact herbicide applications, removal of growing tumbleweeds and application of granular sterilizer herbicide in all tank farm areas and at the frequencies necessary to control weeds within these areas. (Draft schedule attached) This schedule is being reviewed by the mutli-company task team and will be approved by all three companies when review is completed. The granular sterilizer has already been applied to all tank farms in the fall of this year which is the first time in many years the material has been applied before the winter snow which should provide much improved control of germinating weeds next spring.
Poster	^PER Coordinator (Glaman, Linda R) - 12/29/2008 0212
	CLOSED
	PER complete. L Glaman

TASK DUE DATE HISTORY			
Modified	11/18/2008 1129 - ^PER Coordinator	New Due Date	01/12/2009 1630

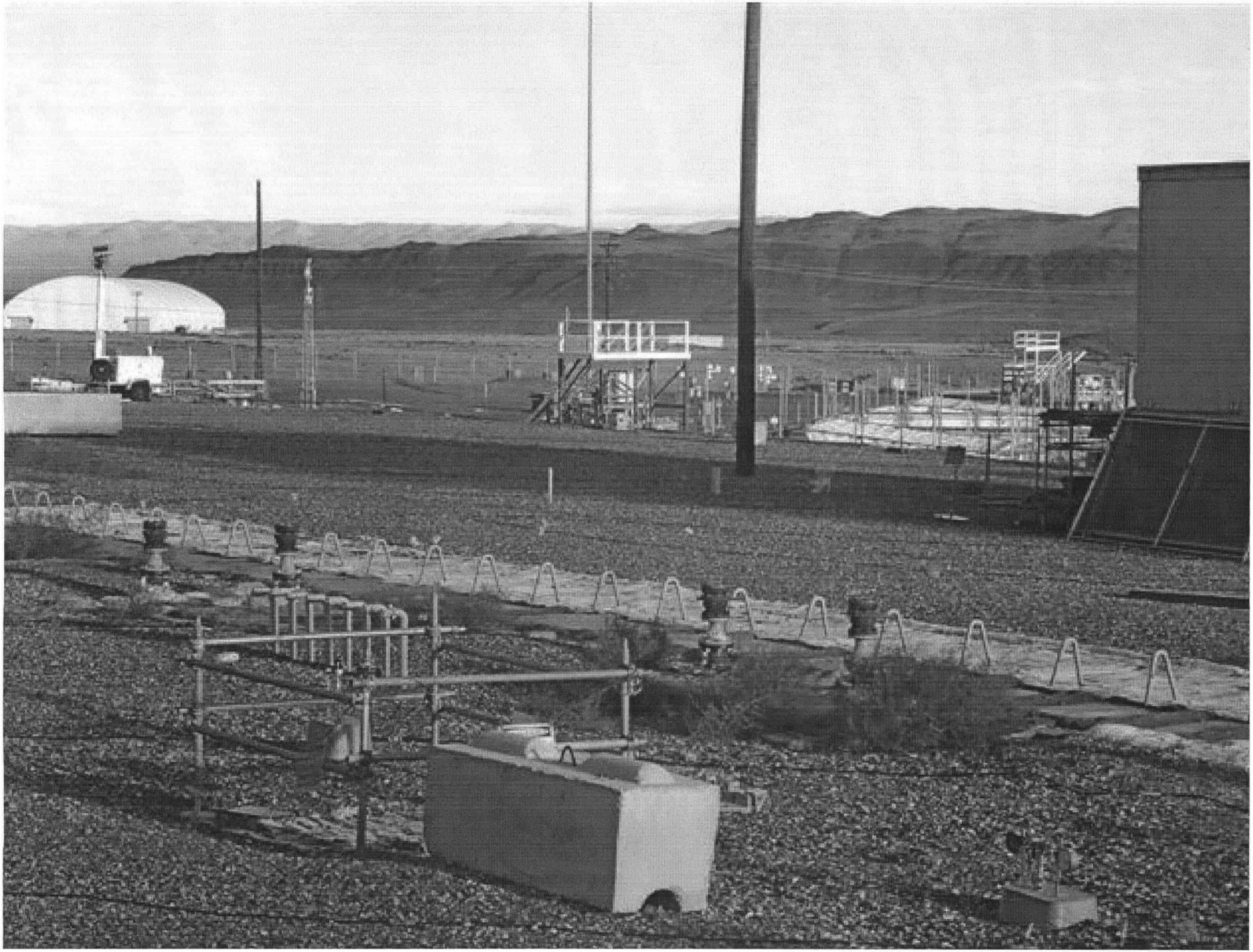
Task# WRPS-PER-2008-0258			
Modified	11/18/2008 1129 - ^PER Coordinator	New Due Date	01/12/2009 1630
Modified	11/13/2008 1015 - ^PER Coordinator	New Due Date	11/15/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			

Task# WRPS-PER-2008-0258			
E-STARS[R] Report Task Detail Report 01/07/2009 0615			
TASK INFORMATION			
Task#	WRPS-PER-2008-0258		
Subject	PIE; ENVIORMENTAL CONTAMINATION SPREAD TO PLANTS AND ANIMALS VS LEGACY CONTAMINATION		
Parent Task#		Status	CLOSED 12/29/2008
Reference		Due	01/12/2009
Originator	^PER Coordinator	Priority	Medium
Originator Phone		Category	PER
Origination Date	11/13/2008 1015	Generic1	None
Remote Task#		Generic2	None
Deliverable	PER Review	Generic3	None
Class	None	View Permissions	Global
Instructions	*No Instructions*		
ROUTING LISTS			
1	Responsible Manager		Inactive
	Evaluate suggestion, enter comments and required actions on PIE/CIM tab of the PER. Disposition in accordance with TFC-ESHQ-Q_C-C-01, Problem Evaluation Request.		
	• Brown, David W - Assign - Completed with comments - 12/29/2008 0821 *Instructions:*		
	• Brown, David W - Assign - Completed with comments - 12/29/2008 0822 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.		
2	Review Initial PER		Inactive
	Review New PER		
	• ^SO(Wallgren, Carl B) - Review - Concur - 11/13/2008 1949 *Instructions:*		
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/17/2008 1548 *Instructions:*		
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/18/2008 1129 *Instructions:*		
ATTACHMENTS			

Task# WRPS-PER-2008-0258	
Attachments	1. Link to PER 2. P1020175.JPG 3. P1020176.JPG 4. P1020177.JPG 5. P1020179.JPG 6. P1020180.JPG 7. P1020181.JPG 8. TOC Schedule Weed Control Only 12-4-08 at 120pm.pdf
COLLABORATION	
COMMENTS	
Poster	Brown, David W - 12/29/2008 0812
	Completed
	A milti-company task team has been initiated to improve control of vegetation in contaminated areas across the Hanford site. As part of this task team a schedule has been generated to provide contact herbicide applications, removal of growing tumbleweeds and application of granular sterilizer herbicide in all tank farm areas and at the frequencies necessary to control weeds within these areas. (Draft schedule attached) This schedule is being reviewed by the mutli-company task team and will be approved by all three companies when review is completed. The granular sterilizer has already been applied to all tank farms in the fall of this year which is the first time in many years the material has been applied before the winter snow which should provide much improved control of germinating weeds next spring.
Poster	Brown, David W - 12/29/2008 0812
	Completed
	A milti-company task team has been initiated to improve control of vegetation in contaminated areas across the Hanford site. As part of this task team a schedule has been generated to provide contact herbicide applications, removal of growing tumbleweeds and application of granular sterilizer herbicide in all tank farm areas and at the frequencies necessary to control weeds within these areas. (Draft schedule attached) This schedule is being reviewed by the mutli-company task team and will be approved by all three companies when review is completed. The granular sterilizer has already been applied to all tank farms in the fall of this year which is the first time in many years the material has been applied before the winter snow which should provide much improved control of germinating weeds next spring.
Poster	^PER Coordinator (Glaman, Linda R) - 12/29/2008 0212
	CLOSED
	PER complete. L Glaman

TASK DUE DATE HISTORY			
Modified	11/18/2008 1129 - ^PER Coordinator	New Due Date	01/12/2009 1630

Task# WRPS-PER-2008-0258			
Modified	11/18/2008 1129 - ^PER Coordinator	New Due Date	01/12/2009 1630
Modified	11/13/2008 1015 - ^PER Coordinator	New Due Date	11/15/2008 1630
SUB TASK HISTORY			
No Subtasks			
-- end of report --			



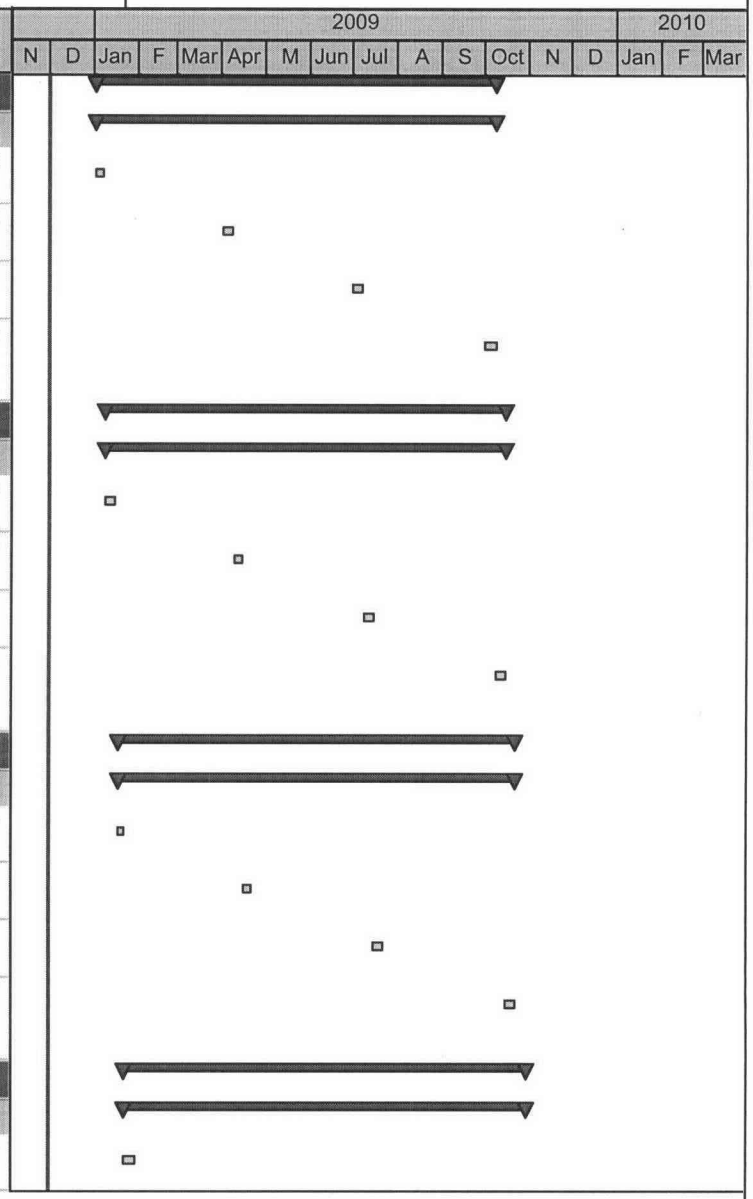
CAUTION
STAY OFF
CONCRETE
WORKING

Biological Control Schedule

TOC Bio Control Waste Site Schedule

04-Dec-08 13:27

Activity ID	Activity Name	HPT's Required	NCO's Required	OD	BL Start	BL Finish
241-A/AX				196	02-Jan-09	08-Oct-09
Tank Farm Weed Control				196	02-Jan-09	08-Oct-09
A4470	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	02-Jan-09	08-Jan-09
A5120	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	6	01-Apr-09	08-Apr-09
A5130	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	01-Jul-09	08-Jul-09
A5140	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds), Granular Sterilizer	1	4	6	01-Oct-09	08-Oct-09
241-AN				196	09-Jan-09	15-Oct-09
Tank Farm Weed Control				196	09-Jan-09	15-Oct-09
A5150	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	09-Jan-09	15-Jan-09
A5160	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	09-Apr-09	15-Apr-09
A5170	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	09-Jul-09	15-Jul-09
A5180	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds), Granular Sterilizer	1	4	5	09-Oct-09	15-Oct-09
241-S/SX				195	19-Jan-09	22-Oct-09
Tank Farm Weed Control				195	19-Jan-09	22-Oct-09
A5190	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	4	19-Jan-09	22-Jan-09
A5200	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	16-Apr-09	22-Apr-09
A5210	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	5	16-Jul-09	22-Jul-09
A5220	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds), Granular Sterilizer	1	4	5	16-Oct-09	22-Oct-09
241-SY				197	23-Jan-09	30-Oct-09
Tank Farm Weed Control				197	23-Jan-09	30-Oct-09
A5230	Tumbleweed Removal (Dead & Growing), Spot Spray (Small weeds)	1	4	6	23-Jan-09	30-Jan-09



Primary Baseline
Milestone
Summary

DRAFT

Fluor Hanford

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0273
In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0273	11/19/2008	09:00	Day Ops-E

Location

OTHER

How Was Problem Discovered

DOE FAC REP

Description of Concern or Problem

A review of the Draft ORP Tank Farm Project Monthly Report for October 2008 indicated the following weakness:

Observation: S-08-AMTF-TANKFARM-011-O02; PER was closed without FR concurrence.
(Brandon Williamson – October 8, 2008)

Discussion:
FR reviewed the closure status of the PER CH2M-PER-2007-2018 and found it was closed on August 19, 2008, despite the FR having non-concurred on August 18, 2008 in E-STARS and by email. The only corrective action listed in the PER is to, "Perform a walk down of area and ensure minimal new growth." The FR's walk down determined that this corrective action was ineffective.

A review of the PER database indicated that this specific issue had not been previously identified.

Requirement Not Satisfied	Source Document Number

Equipment Identification Number	System Identification

Immediate actions Taken or Planned

Wrote this PER.

Recommended Corrective actions

1. Discuss PER Significance Level (i.e., PICIM, TUF, Trend, etc) with the ORP Facility Representative.
2. Resolve to ORP's satisfaction.

Originator Contact

No

Originators Name	Originators ID	Originators Phone	Date Initiated
Hanson, Gregory N	H0078707	(509) 376-2182	11/19/2008

SHIFT OPERATIONS REVIEW

Title

Observation: S-08-AMTF-TANKFARM-011-O02; PER was closed without FR concurrence.

How Discovered	Agency
FACREP Surveillance	

Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	

Describe actions Taken or Recommended

No additional actions taken or recommended by BO SO.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Andrews, Jeffrey E	H0078933	(509) 373-2689	11/19/2008

SCREENING

PER Significance Level	
PER with Resolution	

Independent Assessment Review	Occurrence Report Number	Externally Identified	
No		No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Parnell, Bill			
Program		**Safety Management Program**	
• ^N/A^		• ^N/A^	

PER Screening Comments

PER w/ Res with Informal Apparent Cause Analysis. Non-compliance with TFC-ESHQ-Q-C-C01 "Problem Evaluation Request." Consider re-opening CH2M-PER-2008-2018 and resolving issue to ORP's satisfaction.
cc: Tino Maciuca
(Nancy Brown 11/20/08)

Causal Code

MGT/Comm/Train	**Human Performance**	**GEMS**	**Equip/Eng/Other**
Failed Barrier	**ORPS Code**	**Functional Area**	**Work Process**
	Not Applicable	Operations	• Corrective Action Management
ISMS	**Consequence Code**		
Perform work within the controls	• Communications - Inadequate communications, roles, responsibilities		
PER Screening Chair	**PER Screening Chair ID**	**PER Screening Chair Phone**	**PER Screening Date**
Brown, Nancy L	H0088797	(509) 373-0992	11/20/2008

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes	
Not subject to PAAA			
NTS Report Number	**NTS Report Date**		
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**	
No	No	No	

PAAA Screening Comments

PAAA Reviewer Name	PAAA Review Date	
Anderson, Craig E	11/20/2008	
PAAA Approver Name	**PAAA Approve Date**	
Anderson, Craig E	11/21/2008	

SENIOR MANAGEMENT REVIEW/CONCURRENCE

TF Operations Morning Leadership Call

None. 11/21/08

Instructions for Responsible Manager

Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.

Senior Management	Sr Mgmt ID	Sr Mgmt Phone	Sr Mgmt Review Date
Owen, Annette	H0054042	(509) 372-0533	11/21/2008

CAUSE ANALYSIS

Description of Occurrence

Extent of Condition
Safety Significance
Generic Implications
Remedial Corrective Action
Causal Analysis, Apparent Cause and/or Root Cause Analysis
ATTACHMENTS
Link to PER

AUDIT HISTORY

Change Date	Auditor	Comments
11/20/2008 15:35	Brown, Nancy L	'Assigned Responsible Manager' was changed. 'PER Screening Comments' was changed. 'Functional Area' was changed.
11/21/2008 08:22	Owen, Annette	Responsible Manager Task Launched by Owen, Annette

-- End of Report --
07/08/2009 03:10 PM

Task# WRPS-PER-2008-0273

E-STARS[R] Report
Task Detail Report
07/08/2009 1510

TASK INFORMATION			
Task#	WRPS-PER-2008-0273		
Subject	RES; Observation: S-08-AMTF-TANKFARM-011-O02; PER was closed without FR concurrence.		
Parent Task#		**Status**	Open
Reference		**Due**	08/27/2009
Originator	^PER Coordinator	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	11/19/2008 1141	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Responsible Manager	Active
	Review the PER Screening Tab and Senior Manager Review for requested data. Complete the task in E-STARS in accordance with TFC-ESHQ-Q_C-C-01, and TFC-ESHQ-Q_ADM-C-12 Apparent Cause Analysis & Corrective Action Planning.	
	• Parnell, Bill - Assign - Awaiting Response - Due Date - 08/27/2009 1630 *Instructions:*	
2	Review Initial PER	Inactive
	Review New PER	
	• ^SO(Andrews, Jeffrey E) - Review - Concur - 11/19/2008 1727 *Instructions:*	
	• ^PER Screening(Brown, Nancy L) - Review - Concur - 11/20/2008 1452 *Instructions:*	
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/21/2008 0822 *Instructions:*	

ATTACHMENTS

Attachments	1. Link to PER

COMMENTS

Poster	^PER Coordinator (Owen, Annette) - 12/18/2008 0959
	Extend to 8/27/09 per form A-6003-227.
	The following was presented to the Fac Rep regarding this PER. We agree that it is not acceptable to close PER's without the Facility Representatives concurrence. This issue appears to a misunderstanding on the part of the PER owner. He was communicating with the Facility Representative on the overall progress of the tumbleweed control in and around Tank Farms, he did not understand that closure of this issue was to be based on the 2 individual instances identified in PER CH2M-PER-2008-2018. Since the closure of this PER the area of concern (241-A courtyard and East berm area) has had tumbleweeds removed and pre-emergent applied. In addition to the work that has previously been accomplished, a Biological Control team working with the PRC has been established whose goals are:

Task# WRPS-PER-2008-0273

• To clearly define the boundaries of responsibility between the three companies and document on site maps.
• To establish a prioritized clean up schedule (agreed to by PRC and TOC) for the current and legacy contaminations issues and a schedule for prevention of reoccurrence in the future that will be taken to the operations organizations for integration into or revision so they can support and integrate into their operations schedules.
• To clarify the biological controls between PHMC and the Operating Contractors (PRC and TOC). Also determine if a single posting convention can be used for all three companies
The Fac Rep accepted the response provided, but stated that he wanted this PER to be left open to ensure that commitments made to improve the process for preventing tumbleweed growth, tumbleweed cleanup, and prevention of contaminated tumbleweeds beyond the fence lines is proven to be more effective. Bill Parnell

TASK DUE DATE HISTORY

Modified	12/29/2008 1159 - ^PER Coordinator (Owen, Annette)	**New Due Date**	08/27/2009 1630
Modified	11/21/2008 0822 - ^PER Coordinator	**New Due Date**	01/03/2009 1630
Modified	11/21/2008 0822 - ^PER Coordinator	**New Due Date**	01/03/2009 1630
Modified	11/19/2008 1141 - ^PER Coordinator	**New Due Date**	11/21/2008 1630

SUB TASK HISTORY

No Subtasks

-- end of report --

Save

Problem Evaluation Request (PER)

WRPS-PER-2008-0279
In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2008-0279	11/20/2008	11:15	Eng-BO

Location

All Tank Farms

How Was Problem Discovered

DOE-ORP

Description of Concern or Problem

Background:
The W-314 Monitoring and Control System (MCS) was designed to provide monitoring of leak detection and interlocks to shutdown pumps. This system was acquired through W-314 as a Safety Significant system for automatic pump shutdown. The original design had the following major components: Pump Shutdown, Leak Detection, Programmable Logic Controllers (PLCs), TFLAN (Tank Farm Local Area Network) and HMIs (Human Machine Interfaces). The monitoring function was originally intended to be a general service function and the pump control function was the safety significant function.
Original Design and Safety Classification:
Original design (Leak Detection/Pump Shutdown) was to communicate through analog signals (PLC to PLC) the status of the system and shutdown the transfer pumps. This limited the safety function to pump shutdown contactors, Leak detectors and PLCs. Documentation was generated to support the qualification of these components.

Implementation:
All components had been installed for the monitoring and control portion of the system. Due to the magnitude of the testing and the transfer schedule, a decision was made in October 2006 to allow operators to use the MCS system to monitor leak detection and initiate manual pump shutdown. This leak detection and monitoring system is identified under the Technical Safety Requirements LCO 3.1.1 Transfer Leak Detection System. This change in the implementation of the project changed the general service safety designation of the components (TFLAN, HMI) to Safety Significant for monitoring and indication. The MCS system including the HMI and TFLAN were thoroughly tested prior to acceptance.

Issue:
The documentation required to upgrade the TFLAN and HMI components to Safety Significant were not prepared and issued. Transfers since 2006, when the system was put into operation have relied on these components to perform a safety function required by LCO 3.1.1. Therefore, the legacy issue was the equipment was put into operation without the required qualification documentation.
Since the components were used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This is a TSR violation under criterion 5.4.1.b.2.

Requirement Not Satisfied	Source Document Number
Commercial Grade Item Dedication Documentation Not Prepared	TFC-ENG-DESIGN-C-15, TFC-BSM-CP_CPR-C-06
Equipment Identification Number	**System Identification**
	Waste Transfer

Immediate actions Taken or Planned

1. Senior Management Informed.
2. Occurrence report Issued and notifications made.
3. Red Arrow issued placing a restriction on performing transfers that rely on The W-314 Monitoring and Control System (MCS) leak detection until upgrade documentation and associated corrective actions are complete.
4. Issued PER.

Recommended Corrective actions

It is recommended that this PER be assigned to the Base Operations Engineering Manager.

Originator Contact

I would like to help in investigating the cause

Originators Name	Originators ID	Originators Phone	Date Initiated
Knight, Mark A	H0059226	(509) 373-1199	11/20/2008

SHIFT OPERATIONS REVIEW

Title

W-314 Monitoring and Control System (MCS) do not have qualification documentation

How Discovered		Agency	
self-ID prior to event			
Reportability	**SSC Operability**	**Operability Review**	**Comp Measures Req**
SC-2	N/A	N/A	

Describe actions Taken or Recommended

BO SO issued Occurrence report and notifications made for a Group 3A (2)SC-2. Red Arrow issued placing a restriction on performing transfers

that rely on The W-314 Monitoring and Control System (MCS) leak detection until upgrade documentation and associated corrective actions are complete. No other immediate actions required.

SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Wallgren, Carl B	H0099480	(509) 373-2689	11/20/2008

SCREENING

PER Significance Level			
Significant			
Independent Assessment Review	**Occurrence Report Number**	**Externally Identified**	
No	EM-RP--WRPS-TANKFARM-2008-0002	No	
Assigned Responsible Manager	**Facilities Rep / SSO**	**Safety Management Rep**	
Knight, Mark A		Nelson, Eric A	
Program		**Safety Management Program**	
• ^N/A^		• Engineering Configuration Management	

PER Screening Comments	
None. LG 11/21/08	
Causal Code	
A3B2C05	Human Performance LTA Rule Based Error Situation incorrectly identified or represented resulting in wrong rule used
A3B3C05	Human Performance LTA Knowledge Based Error Incorrect assumption that a correlation existed between two or more facts
A4B1C01	Management Problem Management Methods LTA Management policy guidance/expectations not well-defined, understood or enforced
A4B5C04	Management Problem Change Management LTA Risks/consequences associated with change not adequately reviewed/assessed
A5B2C07	Communications LTA Written Communications Content LTA Facts wrong/requirement not correct
A5B3C02	Communications LTA Written Communication Not Used Not available or inconvenient for use
A6B1C03	Training Deficiency No Training Provided Work incorrectly considered "skill of the craft"

MGT/Comm/Train	Human Performance	GEMS	Equip/Eng/Other

Failed Barrier	ORPS Code	Functional Area	Work Process
	violation of LCO, AC or SR	Engineering	• Configuration Control • Control of Equipment and System Status • Documents and Records • Engineering Evaluation • Technical Safety Requirements (TSR)

ISMS	Consequence Code	
Define scope of work	• Configuration Management - Documentation does not equal field condition • Engineering Requirement - Lack of/not adequately implemented or identified requirement • Records - Errors or incomplete data recording, checklists • Technical Safety Requirement (TSR) - TSR missed or undefined	

PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 372-0533	11/21/2008

PAAA REVIEW

PAAA Screening	PAAA Codes	Function Codes
Potential PAAA Reportable	• 10 CFR 830.122 (d)(2) • 10 CFR 830.122 (e)(1) • 10 CFR 830.122 (g)(1)	• Conduct of Operations (including Drills and Exercises) • Procurement • Records
NTS Report Number	**NTS Report Date**	
Repetitive / Recurrent	**Programmatic**	**Intentional Violation / Misrepresentation**
No	No	No

PAAA Screening Comments

TSR Violation meets reporting threshold of Table A-1 of Enforcement Process Overview as ORPS reportable 3A.2 SC-2.

PAAA Reviewer Name	PAAA Review Date
Anderson, Craig E	11/21/2008
PAAA Approver Name	**PAAA Approve Date**
Anderson, Craig E	11/24/2008

CAUSE ANALYSIS

Description of Occurrence

Background:

The W-314 Monitoring and Control System (MCS) was designed to provide monitoring of leak detection and interlocks to shutdown pumps. This system was acquired through W-314 as a Safety Significant system for automatic pump shutdown. The original design had the following major components: Pump Shutdown, Leak Detection, Programmable Logic Controllers (PLCs), TFLAN (Tank Farm Local Area Network) and HMIs (Human Machine Interfaces). The monitoring function was originally intended to be a general service function and the pump control function was the safety significant function.

Original Design and Safety Classification:

Original design (Leak Detection/Pump Shutdown) was to communicate through analog signals (PLC to PLC) the status of the system and shutdown the transfer pumps. This limited the safety function to pump shutdown contactors, Leak detectors and PLCs. Documentation was generated to support the qualification of these components.

Implementation:

All components had been installed for the monitoring and control portion of the system. Due to the magnitude of the testing and the transfer schedule, a decision was made in October 2006 to allow operators to use the MCS system to monitor leak detection and initiate manual pump shutdown. This leak detection and monitoring system is identified under the Technical Safety Requirements LCO 3.1.1 Transfer Leak Detection System. This change in the implementation of the project changed the general service safety designation of the components (TFLAN, HMI) to Safety Significant for monitoring and indication. The MCS system including the HMI and TFLAN were thoroughly tested prior to acceptance.

Issue:

The documentation required to upgrade the TFLAN and HMI components to Safety Significant were not prepared and issued. Transfers since 2006, when the system was put into operation have relied on these components to perform a safety function required by LCO 3.1.1. Therefore, the legacy issue was the equipment was put into operation without the required qualification documentation.

Since the components were used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This is a TSR violation under criterion 5.4.1.b.2.

UPDATE 5/18/09 (See Attached Addendum):
The purpose of this addendum is to review weaknesses in the Commercial Grade Item (CGI) Dedication process as identified in U.S. Department of Energy - Office of River Protection (ORP) letter 09-ESQ-114 and to ensure the Root Cause Analysis (RCA) for Problem Evaluation Request (PER) WRPS-PER-2008-0279 sufficiently addresses each weakness and if not, identify any additional causes and provide the necessary corrective actions to prevent recurrence.

On April 8, 2009, the Tank Operations Contractor (TOC) received U.S. Department of Energy - Office of River Protection (ORP) letter, 09-ESQ-114, from T. M. Williams to M. Armstead, "Contract Number DE-AC27-08RV14800 - Need for Additional Washington River Protection Solutions LLC (WRPS) Action to Address Weaknesses in Tank Farm's Implementation of Quality Assurance (QA) Program Requirements for Commercial Grade Item Dedication (CGID)." This letter stated that ORP had determined that the TOC CGID program had several implementation weaknesses and that one of the examples to support this conclusion was the following:

"The TOC has not identified adequate root, direct and contributing causes for the initial failure discussed in Reference 1 to perform CGID in accordance with DOE and WRPS requirements and for subsequent issues listed by WRPS in its Noncompliance Tracking System report on this subject."

Reference 1 is ORP letter from J.C. Poniatowski to M. Armstead, WRPS, "Washington River Protection Solutions LLC Surveillance Report S-09-ESQ-TANKFARM-001 - Tank Farm Implementation of Quality Assurance Program (QAP) Requirements for Commercial Grade Item Dedication (CGID for Tank Farm Use," 09-ESQ-006, dated January 22, 2009. This surveillance identified two findings:

• S-09-ESQ-TANKFARM-001-F01 – Dedication packages supporting two CGIDs did not provide sufficient objective evidence that the items met design criteria to be upgraded to a safety related component to perform a safety related function.
• S-09-ESQ-TANKFARM-001-F02 – Engineering and Quality Assurance (QA) personnel who perform CGID activities are not trained on process implementation.

Therefore, an analysis of the weaknesses that support these findings was completed. In addition, the Extent of Condition in the RCA stated that the corrective actions assigned to address RC-01 would also address WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436. Each of these PERs were again reviewed to ensure they were addressed by the RCA

Conclusions
The overall conclusion determined that RC-01 was the root cause for the ORP identified findings and extent of condition PERs (WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436). One new contributing cause on less than adequate training, CC-03, was identified during the analysis. However, corrective actions assigned to RC-01 will address CC-03. gh 5/19/09

Extent of Condition

Any components, designated less than Quality Assurance Level FULL, that have been upgraded for Safety Significant application using TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, since December 5, 2003, should be reviewed/revised to ensure compliance. This would include the issues identified in WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436. The corrective actions assigned to address RC-01 will also address the Extent of Condition.

Safety Significance

Safety functions performed by safety-significant structures, systems and components (SSCs) prevent or mitigate releases of radiological materials to onsite workers and toxic chemicals to the offsite public and onsite workers. Safety significant SSCs also include those safety SSCs that protect the facility worker from serious injury (or fatality) because of hazards not controlled by institutional safety programs. Per LCO 3.1.1, the Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMI) are considered safety significant when used to monitor leak detection during double-shell tank waste transfers. The commercial grade item dedication process ensures that the safety functions of safety significant components are preserved (i.e., the commercial grade item is suitable for use in its intended application and that the item will perform its safety function). If the CGI dedication process is flawed, and the resulting qualification documentation is in question, there is no assurance that the component will perform its safety function which initiates operator response to a waste leak. This could result in unacceptable (i.e., personnel or environmental) consequences.

Generic Implications

The generic implications of this event are the interfaces between the procurement process and CGI dedication process. Both processes rely on each other and if an issue is identified with one process, the other process should be reviewed for impacts. In this particular case, corrective actions address both the procurement and CGI dedication process.

Remedial Corrective Action

On November 20, 2008 at 1440 hrs – Red Arrow Entry: Transfers that rely on the W-314 MCS HMI are prohibited until safety significant upgrade documentation and associated corrective actions are completed [Shift Manager Logbook].

Causal Analysis, Apparent Cause and/or Root Cause Analysis

The causal analysis performed for the MCS (TFLAN, HMI) upgrade dedication documentation event utilized Change analysis. In addition, Event Causal Factors charting was also employed to compile collected data in chronological order, identify inappropriate actions, determine failure modes, identify/categorize causes and evaluate precursors from a Human Performance perspective

Root Cause

RC-01 - The Root Cause of this event was the impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized, or understood.

Failure Mode Category - A4 – Management Problem, B5 – Change Management less than adequate (LTA), CO4 – Risks/consequences associated with change not adequately reviewed/assessed.

The QAPD (TFC-PLN-02) captures the requirements of ASME NQA-1 which requires upgrade dedication for commercial grade items used in safety applications. TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance describes the graded application of the QAPD requirements to items, services, and processes and states that for the procurement of items QAL ENHANCED, CGI upgrade dedication was not required. This graded approach was applied to the procurement process and to the CGI Upgrade Dedication process.

TFC-BSM-CP_CPR-C-06, Rev F-11, dated September 12, 2006, states for "existing" material without receipt inspection (tagging) that will be installed in an application requiring ENHANCED or FULL QAL (QL-1, 2 or 3) designation, upgrade that material in accordance with the following:

- If applicable, generate QAIP specifying inspection criteria.

- Generate an upgrade letter referencing the QAIP and obtain approval by the CH2M HILL Chief Engineer and by the Quality Assurance Director.

- Perform the inspection per QAIP.

- For items to be upgraded to FULL QAL only, complete the upgrade via the CGI upgrade process (TFC-ENG-DESIGN-C-15).

The existing Project W-314 components (TFLAN, HMI), without receipt inspection (green tagging), were upgraded per interoffice memo 7T600-06-CWJ-001, Safety Equipment List Components to be Upgraded to Comply with the Tank Farm Documented Safety Analysis RPP-13033, R.1.R. This memo documents component functional testing; approvals of the Chief Engineer and Quality Assurance Director; and component

upgrade dedication to perform the safety functions required by the DSA for detecting a leak. In addition, since the components were QAL designated as ENHANCED instead of FULL (i.e., graded application per TFC-ESHQ-Q_ADM-C-01), upgrade by the CGI process was not required by TFC-BSM-CP_CPR-C-06.

The Purpose/Scope of TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, Rev A, dated September 20, 2002, stated "This procedure establishes the dedication process, dedication requirements and related responsibilities for the use of commercial grade items in SC or SS applications for Hanford Tank Farm Contractor managed nuclear facilities." Based on the QA graded approach, the Purpose/Scope (Rev A-5, dated December 22, 2003) was changed to "This procedure ... for the use of commercial grade items as safety components and having a Quality Assurance Level (QAL) designation of FULL, in SC or SS applications ... facilities." Revision A 10, dated March 30, 2006, which was in effect during the TFLAN and HMI upgrade dedications, had the same Purpose/Scope as Rev A-5. The System Engineer reviewed TFC-ENG-DESIGN-C 15, Rev A-10 for applicability and found that the procedure only applied to QAL designation of FULL. Since the TFLAN and HMIs were QAL designated as ENHANCED, TFC-ENG-DESIGN-C 15 did not apply. Therefore, CGI Upgrade documentation was not required or completed. The System Engineer exited the procedure and added the designated components to the safety equipment list.

PER-2003-2888 identified an inconsistency between the procurement process (i.e., TFC-TFC-BSM-CP_CPR-C-06) and the commercial grade dedication process (i.e., TFC-ENG-DESIGN-C-15) following issuance of a revision to TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance. Discussed these changes with the PER originator who stated that a clarification to the CGI process was required to potentially reduce the volume of material requiring upgrade dedication paperwork. In addition, he stated that there were several months of discussion between QA and Engineering management on this topic. However, the management personnel who were involved with the discussions and the procedure change are no longer with our company. TFC-ENG-DESIGN-C-15 was revised to Rev A-5, which added the QAL designation of FULL to the Purpose/Scope.

TFC-ENG-DESIGN-C-15 was revised on April 24, 2008 to address component QAL designations of FULL and ENHANCED. Corrective actions to evaluate and revise the commercial grade item dedication process have been assigned to address this causal factor. In addition, a compensatory measure has been assigned to address the interim period until the evaluation and revisions have been completed.

Direct Cause

DC-01 - The Direct Cause of this event was the documentation required to upgrade the MCS monitoring function only components (HMI, TFLAN) to SS was not completed per the QAPD.

Failure Mode Category - A5 – Communication LTA, B2 – Written Communication Content LTA, CO7 – Facts wrong/requirements not correct

The documentation required for upgrade of the TFLAN and HMI components to safety significant was not prepared and issued (See RC-01) in accordance with the QAPD (i.e., NQA-1). On December 16, 2006 the 241-AY-102 to 241-AN-106 transfer was the first transfer to utilize the MCS monitoring function only components to satisfy the safety function of LCO 3.1.1. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This was the initial TSR violation under criterion 5.4.1.b.2. Since then, many DST waste transfers have relied on these components to satisfy the safety function and therefore a legacy issue exists.

TFC-ENG-DESIGN-C-15 was revised on April 24, 2008 to address component QAL designations of FULL and ENHANCED. Corrective actions have been assigned to address the direct cause.

Contributing Causes

The following conditions were less than desirable, possibly aggravated the event, or assisted in allowing the event to occur but could not be demonstrated as being capable of preventing the event if the conditions were not present at the time of the event. The contributing causes are discussed below. In addition, the contributing causes were looked at from a Human Performance perspective.

CC-01 – When components are added to the SEL (RPP-8792), this does not indicate an evaluation of individual components to meet the SEL requirements has been completed.

Failure Mode Category - A3 – Human Performance LTA, B3 – Knowledge Base Error, C05 – Incorrect assumption that a correlation existed between two or more facts.

Failure Mode Category - A3 – Human Performance LTA, B2 – Rule Based Error, C05 – Situation incorrectly identified or represented resulting in wrong rule used.

This contributing cause has two parts:

- On December 14, 2006, Unreviewed Safety Question (USQ) Determination, TF 06 1657 D, Operation of the AY/AZ MCS (Monitoring Functions Only) and Release of Procedures TO-025-002, "Operate Monitor and Control System HMI in WTA Mode," Rev.A-0 (Draft) and ARP-T-041-00002, "Respond at Alarms at MCS HMI Stations," Rev. A-0 (Draft) was issued. It states that "Project W-314 has installed a new Monitoring and Control System (MCS) and this system (monitoring functions only) is being turned over on a farm-by-farm basis. The 'change' being evaluated in this USQD is operational acceptance and actual operation (monitoring functions only) of the MCS." The USQD states that the SEL has been revised to encompass alarm monitoring with the AY/AZ MCS as follows: (1) Specific AY/AZ MCS components addressed in the SEL include PLCs, HMIs, HMI alarms, MCS Computer Software (both HMI personal computer software and PLC software) and TFLAN and (2) Management of MCS Computer Software as safety significant is addressed.

In discussions with the USQ Evaluator, he used the fact that (1) he was a member of the Joint Test Review Group which had reviewed the Project W 314 testing documentation and (2) that the AY/AZ MCS components had been added to RPP 8792, to determine that the components must already meet safety significant criteria listed in the SEL.

- RPP-8792, Section "Configuration Control" states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In discussions with many different people (e.g., engineers, managers) there is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance).

Corrective actions assigned to RC-01 address this contributing cause. In addition, revision of the SEL process to comprehensively determine and document SSC safety function performance requirements (E-Stars #CH2M-PER-2008-1205.2) and evaluation of safety significant SSCs (E-Stars #CH2M-PER-2008-1205.3), as assigned by the Root Cause Analysis for CH2M-PER-2008-1205, support addressing this contributing cause.

CC-02 – The traceability of upgrade dedication documentation for installed components is less than adequate (LTA).

Failure Mode Category - A5 – Communications LTA, B3 – Written Communication Not Used, C02 – Not available or inconvenient for use.

Failure Mode Category - A4 – Management Problem, B1 – Management Methods LTA, C01 – Management policy guidance/expectations not well-defined, understood or enforced.

On November 18, 2008, the 219-S to SY-101 transfer was initiated. During the transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being general service instead of safety significant. This began a search for the upgrade dedication paperwork. On November 20, 2008, when the documentation could not be found, a TSR Violation was declared. However, on December 31, 2008 the upgrade dedication letters for 241-AY/AZ and 241-SY MCS (monitoring function only) were found in an engineering letter book. Component upgrade documentation must be easily traced back to the specific component and readily available.

In addition, upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, AW, and -AP was probably never completed due to changes in personnel and engineering roles and responsibilities. During employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.

Corrective actions have been assigned to address this contributing cause.

CORRECTIVE ACTIONS

Actionee	Action Due Date	E-STARS Number
Nelson, Eric A	02/12/2009	WRPS-PER-2008-0279.1

Action

CATPR-01-01 - Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications. This action addresses RC-01.

Deliverable: Issue Management Directive (TFC-MD-xxx).

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
- WRPS-PER-2008-0279.1 CLOSURE E-MAIL.msg
- WRPS-PER-2008-0279.1 CLOSURE MD & ADCA.pdf

Actionee	Action Due Date	E-STARS Number
Shugars, David L	09/30/2009	WRPS-PER-2008-0279.2

Action

CATPR-01-02: Revise TFC-PLN-02, Quality Assurance Program Description to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.

Deliverable: Revised TFC-PLN-02.
*****
Approved due date extension to 9/30/09. tls 6/2/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Nelson, Eric A	06/02/2009	WRPS-PER-2008-0279.3

Action

CATPR-01-03: Revise TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.

Deliverable: Revised TFC-ESHQ-Q_ADM-C-01.

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- TFC-ESHQ-Q_ADM-C-01 Rev B,_Graded_Quality_Assurance.doc
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Nelson, Eric A	07/19/2009	WRPS-PER-2008-0279.4

Action

CATPR-01-04 - Revise TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.

Deliverable: Revised TFC-ENG-DESIGN-C-15.
*****
Approved due date extension to 7/19/09. tls 5/26/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
-

Actionee	Action Due Date	E-STARS Number
Robinson, John M	06/02/2009	WRPS-PER-2008-0279.5

Action

CATPR-01-05: Revise TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.

Deliverable: Revised TFC-BSM-CP_CPR-C-06.

Corrective Action Attachments

- MD-63 PROCUREMENT OF FULL, ENHANCED OR COMMERCIAL QUALITY ITEMS DESIGNATED SAFETY SIGNIFICANT NOT PROCURED FROM AN EVALUATED SUP
- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- Revised Procurement of Items Procedure
- Revised Procurement of Items Procedure
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- Email accepting POI revisions to close PER
- Email accepting POI revisions to close PER
- TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials).doc
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
- WRPS-PER-2008-0279.5 CLOSURE TF-MD-062,_Interim_Direction_with_Revised_Requirements_for_Procurement_of_Safety_Significant_SSCs_and_Commercial_Grade_Item_.doc
- WRPS-PER-2008-0279.5 CLOSURE TFC-BSM-CP_CPR-C-06,_Rev G-6 Procurement_of_Items_(Materials).doc

Actionee	Action Due Date	E-STARS Number
Cato, Diane M	07/19/2009	WRPS-PER-2008-0279.6

Action

CC-02-01 - Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component. This action addresses CC-02.

Deliverable: Revised TFC-ENG-DESIGN-C-15 and TFC-ENG-FACSUP-C 23.
*****
Approved due date extension to 7/19/09. tls 6/1/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
- WRPS-PER-2008-0279.6_Closure_TFC-ENG-DESIGN-C-15.doc

Actionee	Action Due Date	E-STARS Number
Nelson, Eric A	09/30/2009	WRPS-PER-2008-0279.7

Action

CC-02-02 - Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments. This action addresses CC-02.

Delliverable: Guidance document.
*****
Approved due date extension to 9/30/09. tls 6/19/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Keith, Lloyd J	08/31/2009	WRPS-PER-2008-0279.8

Action

CATPR-01-06 - Develop training material on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.

Deliverable: Training material on revised CGI dedication process.
*****
Approved due date extension to 8/31/09. tls 6/16/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Keith, Lloyd J	10/29/2009	WRPS-PER-2008-0279.9

Action

CATPR-01-07 - Train Engineering and QA personnel on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.

Deliverable: Completed training rosters with 90% completion of Engineering and QA personnel.
*****
Approved due date extension to 10/29/09. tls 6/16/09

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Cato, Diane M	09/30/2009	WRPS-PER-2008-0279.10

Action

CATPR-01-08 - Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in Letter, W. J. Johnson, WRPS, to S. J. Olinger, ORP, Contract No. DE-AC27-08RV14800 – Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues, WRPS 0900098, dated January 16, 2009. This action addresses RC-01.

Deliverable: Letter documenting evaluation and/or revision, as required, of commercial grade item dedication records included in letter WRPS-0900098.

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Knight, Mark A	12/30/2009	WRPS-PER-2008-0279.11

Action

EPA-01 - Perform an End Point effectiveness assessment to:

- Verify completion of actions.

- Following completion of actions:

- Review training material to ensure issues were captured.

- Interview for retention of training information, personnel (10 Engrs, 5 QA) who attended training.

- Review recently completed CGI documentation (minimum of 2 packages) for compliance to revised process.

Deliverable: Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

Actionee	Action Due Date	E-STARS Number
Roberts, Mark A	02/10/2009	WRPS-PER-2008-0279.12

Action

DC-01-01 -Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action addresses DC-01. NOTE: This action was completed on 12/17/08, but is being launched to collect objective evidence.

Deliverable: Issue CGI Dedication forms for the TFLAN and HMI components.

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
- WRPS-PER-2008-0279.12 CLOSURE E-MAIL.msg
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03046.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03047.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03048.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03049.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03050.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03051.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03052.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03053.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03054.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03055.pdf
- WRPS-PER-2008-0279.12_CLOSURE_CGI-03056.pdf

Actionee	Action Due Date	E-STARS Number
Roberts, Mark A	02/10/2009	WRPS-PER-2008-0279.13

Action

DC-01-02 - Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. This action addresses DC 01. NOTE: This action was completed on 1/7/09, but is being launched to collect objective evidence.

Deliverable: Issue Interoffice Memo, WRPS-0900045, "Commercial Grade Item Upgrade Dedication of Tank Farm Local Area Network and Human Machine Interface Components of the Tank Farm Monitoring and Control System for Double-Shell Tank Waste Transfers."

Corrective Action Attachments

- 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
- EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
- EM-RP--WRPS-TANKFARM-2008-0002 update.htm
- EM-RP--WRPS-TANKFARM-2008-0002.htm
- Link to PER
- RCA 2008-0279 ADDENDUM 5-19-09.pdf
- WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
- WRPS-PER-2008-0279.13 CLOSURE E-MAIL.msg
- WRPS-PER-2008-0279.13_CLOSURE_INTEROFFICE_MEMO_WRPS_-_0900045_.pdf

ATTACHMENTS
2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
EM-RP--WRPS-TANKFARM-2008-0002 update.htm
EM-RP--WRPS-TANKFARM-2008-0002.htm
Link to PER
RCA 2008-0279 ADDENDUM 5-19-09.pdf
WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

AUDIT HISTORY

Change Date	Auditor	Comments
11/24/2008 06:56	Glaman, Linda R	'Occurrence Report' was added. L Glaman
11/24/2008 07:56	Owen, Annette	Responsible Manager Task Launched by Owen, Annette
01/29/2009 08:23	Steelman, Tracy L	Corrective actions Launched by Steelman, Tracy L
05/18/2009 08:29	Steelman, Tracy L	'Description of Occurrence' was changed.
05/18/2009 10:47	Owen, Annette	'Description of Occurrence' was changed.
05/26/2009 13:22	Steelman, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
05/26/2009 13:22	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/01/2009 11:13	Steelman, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/01/2009 11:16	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/02/2009 13:30	Steelman, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/02/2009 13:30	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/16/2009 14:27	Steelman, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/16/2009 14:28	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/16/2009 14:28	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
06/19/2009 14:40	Steelman, Tracy L	Change to Cause Analysis screen/Corrective Action plan.
06/19/2009 14:41	Steelman, Tracy L	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

-- End of Report --
08/06/2009 09:43 AM

Task# WRPS-PER-2008-0279

E-STARS[R] Report
Task Detail Report
08/06/2009 0943

TASK INFORMATION			
Task#	WRPS-PER-2008-0279		
Subject	SIG; W-314 Monitoring and Control System (MCS) do not have qualification documentation		
Parent Task#		**Status**	Open
Reference		**Due**	01/09/2010
Originator	^PER Coordinator	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	11/20/2008 1532	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective actions Routing Lis	Active
	To launch Corrective actions.	
	• ^PER CAs - Assign - Awaiting Response - Due Date - 01/05/2010 0000 *Instructions:*	
	• Nelson, Eric A - Review - Awaiting Response - Due Date - 01/09/2010 0000 *Instructions:*	
2	Responsible Manager	Inactive
	Perform RCA & CAP with End Point Assessment Criteria in accordance with TFC-ESHQ-Q_C-C-01, PER & TFC-ESHQ-Q_ADM-C-11, Root & Common Cause Analysis & Corrective Action Planning. 'Save' Causal tab on PER. Ensure PER is on ESRB agenda.	
	• Knight, Mark A - Assign - Withdrawn - 12/18/2008 0919 *Instructions:*	
	• Knight, Mark A - Assign - Completed with comments - 01/28/2009 1623 *Instructions:* Did you contact the originator about the PER? Document your contact in the response window.	
	• Nelson, Eric A - Review - Withdrawn - 01/29/2009 0822 *Instructions:* Safety Management Representative Review	
3	Review Initial PER	Inactive
	Review New PER	
	• ^SO(Wallgren, Carl B) - Review - Concur - 11/20/2008 1544 *Instructions:*	
	• ^PER Screening(Owen, Annette) - Review - Concur - 11/21/2008 1411 *Instructions:*	
	• ^Mgr Review(Owen, Annette) - Review - Concur - 11/24/2008 0756 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht

Task# WRPS-PER-2008-0279

	3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 12/18/2008 0918
Editor	^PER Coordinator (Steelman, Tracy L (inactive)) - 12/18/2008 0930
	Approved due date extension to 1/30/09. tls 12/18/08
	Extension Justification: Additional time is required to complete/finalize root cause analysis due to competing demands for key resources. The extension was approved by F. Beranek, ESRB Sponsor, on 12/17/08. tls 12/18/08
Poster	Knight, Mark A (Bragg, David A) - 01/28/2009 1623
	Completed
	The Root Cause Analysis Report has been reviewed and approved by the ESRB on 01/27/09. Multiple corrective actions will be launched. The PER originator is out of the office due to family matters and therefore could not be contacted regarding the present status of WRPS-PER-2008-0279.

TASK DUE DATE HISTORY

Modified	01/29/2009 0822 - ^PER Coordinator	**New Due Date**	01/09/2010 0000
Modified	12/18/2008 0912 - ^PER Coordinator (Steelman, Tracy L)	**New Due Date**	01/30/2009 1630
Modified	11/24/2008 0756 - ^PER Coordinator	**New Due Date**	12/20/2008 1630
Modified	11/24/2008 0756 - ^PER Coordinator	**New Due Date**	12/24/2008 1630
Modified	11/20/2008 1532 - ^PER Coordinator	**New Due Date**	11/22/2008 1630

SUB TASK HISTORY

Subtask#	WRPS-PER-2008-0279.1				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-01 - Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial g				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.2				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-02: Revise TFC-PLN-02, Quality Assurance Program Description to e				
Originator	^PER CAs				
	Routing List	Route List			
		Assignee	McElroy, Michael L	**Response**	
	Routing List	Corrective Action			
		Assignee	Shugars, David L	**Response**	
		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.3				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-03: Revise TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance to ensure that commercial grade item dedication is required				

Task# WRPS-PER-2008-0279

Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.4				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-04 - Revise TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Ded				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.5				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-05: Revise TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) to ensure that commercial grade item dedication is				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.6				
Subject	WRPS-PER-2008-0279; SIG; CC-02-01 - Establish a process for assembly of safety significant component				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.7				
Subject	WRPS-PER-2008-0279; SIG; CC-02-02 - Establish a guidance document for engineering personnel turnover				
Originator	^PER CAs				
	Routing List	Route List			
		Assignee	Littlejohn, Sue M	**Response**	
	Routing List	Corrective Action			
		Assignee	Nelson, Eric A	**Response**	
		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.8				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-06 - Develop training material on the revised CGI dedication proce				
Originator	^PER CAs				
	Routing List	Route List			
		Assignee	Cuneo, Joseph R	**Response**	
	Routing List	Corrective Action			
		Assignee	Keith, Lloyd J	**Response**	
		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.9				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-07 - Train Engineering and QA personnel on the revised CGI dedicat				
Originator	^PER CAs				
	Routing List	Corrective Action			
		Assignee	Keith, Lloyd J	**Response**	

Task# WRPS-PER-2008-0279

		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.10				
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-08 - Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment				
Originator	^PER CAs				
	Routing List	Corrective Action			
		Assignee	Cato, Diane M	**Response**	
		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.11				
Subject	WRPS-PER-2008-0279; SIG; EPA-01 - Perform an End Point effectiveness assessment to: - Verify completion of actions. - Following completion of ac				
Originator	^PER CAs				
	Routing List	Corrective Action			
		Assignee	Knight, Mark A	**Response**	
Subtask#	WRPS-PER-2008-0279.12				
Subject	WRPS-PER-2008-0279; SIG; DC-01-01 -Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action add				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			
Subtask#	WRPS-PER-2008-0279.13				
Subject	WRPS-PER-2008-0279; SIG; DC-01-02 - Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE statu				
Originator	^PER CAs				
	Routing List	*No Active Routing List*			

-- end of report --

From: Anderson, Craig E
Sent: Tuesday, March 17, 2009 2:45 PM
To: Cato, Diane M; Roberts, Mark A
Cc: Steelman, Tracy L; Glaman, Linda; Maciuca, Constantin
Subject: WRPS-PER-2009-0387

Importance: High

Diane,

As you are well aware, WRPS-PER-2009-0387 was written and assigned to you to address the issue of material disposition for items that were not appropriately addressed by the causal analysis for WRPS-PER-2008-0279. A corrective action(s) needs to be developed to be added to that causal analysis to provide material disposition. This addition can be done by preparing a SPER/Corrective Action/End Point Assessment, Extension/Change/Transfer Request (A-6003-0543) to be approved by the Responsible Manager for WRPS-PER-2008-0279 (Mark Knight/Mark Roberts), Fred Beranek and me; the corrective action(s) needs to be added to the Noncompliance Tracking System Report (NTS-ORP--WRPS-TANKFARM-2008-0001), and form A-6003-0543 is the vehicle for doing so.

Unless directed by the ESRB to do so, I would not add corrective actions to the NTS Report that are developed to address why the causal analysis did not appropriately address material disposition. That is an issue separate from the WRPS-PER-2008-0279, and not in itself NTS reportable.

If you have any questions, please contact me at 2-3940.

Craig Anderson

EM-RP--WRPS-TANKFARM-2008-0002 FINAL

Occurrence Report

After 2003 Redesign

Tank Farms

(Name of Facility)

Nuclear Waste Operations/Disposal

(Facility Function)

Hanford Site — Washington River Protection Solutions, LLC

(Site) — (Contractor)

Name: Knight, Mark A
Title: Manager, Base Operations Engineering — **Telephone No.:** (509) 373-1199

(Facility Manager/Designee)

Name: WATERS, SHAUN F
Title: OPERATIONS SPECIALIST — **Telephone No.:** (509) 373-3457

(Originator/Transmitter)

Name: — **Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: EM-RP--WRPS-TANKFARM-2008-0002

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

2. Report Type and Date: FINAL

	Date	Time
Notification:	11/21/2008	16:23 (ETZ)
Initial Update:	12/30/2008	11:32 (ETZ)
Latest Update:	02/19/2009	14:00 (ETZ)
Final:	03/04/2009	19:44 (ETZ)

3. Significance Category: 2

4. Division or Project: Washington River Protection Solutions, LLC (WRPS)

5. Secretarial Office: EM - Environmental Management

6. System, Bldg., or Equipment: Monitoring and Control/Tank Farms/Waste Transfer

7. UCNI?: No

8. Plant Area: 200 East/West

9. Date and Time Discovered: 11/20/2008 11:15 (PTZ)

10. Date and Time Categorized: 11/20/2008 12:15 (PTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
11/20/2008	12:20 (PTZ)	Sorensen, R. C.	DOE-ORP
11/20/2008	12:20 (PTZ)	Ross, W. E.	WRPS
11/20/2008	12:30 (PTZ)	Trump, G. D.	ONC
11/20/2008	12:45 (PTZ)	Owen, P. L.	WRPS

13. Subject or Title of Occurrence:

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

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14. Reporting Criteria:

3A(2) - Any violation or noncompliance of a Hazard Category 1, 2, or 3 nuclear facility's Technical Safety Requirement (or Operational Safety Requirement) Limiting Control Setting, Limiting Condition for Operation, Administrative Control, or Surveillance Requirement.

Exception: An event consisting solely of a surveillance test performed after the prescribed surveillance period, and in which the equipment was found to be capable of performing its specified safety function. (See separate criterion for late surveillance tests below).

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15. Description of Occurrence:

The Monitoring and Control System (MCS), designed to provide monitoring of leak detection systems and pump interlocks, was acquired through Project W-314 as a Safety Significant system for automatic waste transfer pump shutdown. The documentation required to upgrade two components of the MCS, the Tank Farm Local Area Network (TFLAN) and the Human Machine Interface (HMI), to Safety Significant were not prepared and issued. Transfers since 2006, when MCS was put into operation, have relied on these components to perform a safety function required by the "Transfer Leak Detection System" limiting condition for operation (LCO).

Therefore, the legacy issue was the equipment was put into operation without the required qualification documentation. Since the components were used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the "Transfer Leak Detection System" LCO. As a result, failure to meet the LCO is a violation of the Tank Farm Technical Safety Requirement.

Project W-314, Tank Farm Restoration and Safe Operation Upgrades, restored/upgraded existing Hanford Tank Farm facilities and systems to ensure that the Tank Farm infrastructure will be able to support near term waste feed delivery and disposal system and continue safe management of tank waste.

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16. Is Subcontractor Involved? No

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17. Operating Conditions of Facility at Time of Occurrence:

Does not apply.

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18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

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19. Immediate Actions Taken and Results:

Red Arrow issued placing a restriction on performing transfers that rely on the Project W-314 Monitoring and Control System (MCS) leak detection until upgrade documentation and associated corrective actions are complete.

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20. ISM:

1) Define the Scope of Work

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21. Cause Code(s):

A3B2C05 - Human Performance Less Than Adequate (LTA); Rule Based Error; Situation incorrectly identified or represented results in wrong rule used
-->couplet - NA
A3B3C05 - Human Performance Less Than Adequate (LTA); Knowledge Based Error; Incorrect assumption that a correlation exists between two or more facts
-->couplet - NA
A4B1C01 - Management Problem; Management Methods Less Than Adequate (LTA); Management policy guidance / expectations not well-defined, understood or enforced
A4B5C04 - Management Problem; Change Management LTA; Risks / consequences associated with change not adequately reviewed / assessed
A5B2C07 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Facts wrong / requirements not correct
A5B3C02 - Communications Less Than Adequate (LTA); Written Communications Not Used; Not available or inconvenient for use

22. Description of Cause:

The causes of this event were determined using Root Cause Analysis utilizing Change Analysis methodology as defined in the ESHQ Manual, Quality Administration, TFC-ESHQ-Q_ADM-C-11, "Root and Common Cause Analysis and Corrective Action Planning."

Project W-314 Monitoring and Control system (MCS) was designed to provide monitoring of leak detection and interlocks to shutdown waste transfer pumps. This system was acquired through Project W-314 as a Safety Significant (SS) system for automatic pump shutdown. The original design had the following major components: Pump Shutdown, Leak Detection, Programmable Logic Controllers (PLC), Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMI). The monitoring function was originally intended to be a general service function and the pump control function was the safety significant function.

All components had been installed for the monitoring and control portion of the system. Due to the magnitude of the testing and the transfer schedule, a decision was made in October 2006 to allow operators to use the MCS system to monitor leak detection and initiate manual pump shutdown. This leak detection and monitoring system is identified under the Technical Safety Requirements (TSR) Limiting Condition for Operation (LCO), Transfer Leak Detection System (3.1.1). This change in the implementation of the project changed the general service safety designation of the components (TFLAN, HMI) to safety significant for monitoring and indication. The MCS system, including the TFLAN and HMI, were thoroughly tested prior to acceptance.

However, the documentation required upgrading the TFLAN and HMI components to safety significant were not prepared and issued. Transfers since 2006, when the system was put into operation, have relied on these components to perform a safety function required by LCO 3.1.1. Therefore, the legacy issue was that equipment was put into operation without the required qualification documentation. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of the LCO were not met.

Root Cause

The root cause of this event was the impacts of introducing a graded quality assurance process into the commercial grade item dedication process, to address commercial grade items as safety components in safety significant applications, was not adequately assessed, recognized, or understood (A4B5C04).

The Tank Farm contractor's Quality Assurance Program Description (QAPD) plan captured the American Society of Mechanical Engineers' Quality Assurance Program for Nuclear Facility Applications (ASME NQA-1) requirements regarding upgrade dedication of commercial grade items (CGI) used in safety applications. ESHQ's Graded Quality Assurance (GQA) procedure describes the graded application of the QAPD requirements for items, services, and processes and states that for the procurement of items quality assurance level (QAL) ENHANCED, CGI upgrade dedication was not required. This graded approach was applied to Business Service's Procurement of Items (Materials) (PoI) procedure and to Engineering's Commercial Grade Items Upgrade Dedication (CGD) procedure.

Business Service's PoI procedure, dated September 12, 2006, states for "existing" material without receipt inspection (green tagging) that will be installed in an application requiring ENHANCED or FULL QAL (quality level QL-1, 2 or 3) designation, upgrade that material in accordance with the following:

• If applicable, generate quality assurance inspection plan (QAIP) specifying inspection criteria
• Generate an upgrade letter referencing the QAIP and obtain the CH2M HILL Chief Engineer and Quality Assurance Director approval

• Perform the inspection per QAIP
• For items to be upgraded to FULL QAL only, complete the upgrade via Engineering's CGD procedure

The existing Project W-314 TFLAN and HMI components, without receipt inspection (green tagging), were upgraded per an interoffice memo (7T600-06-CWJ-001) titled, "Safety Equipment List Components to be Upgraded to Comply with the Tank Farm Documented Safety Analysis RPP-13033, R.1.R." This memo, approved by the Chief Engineer and Quality Assurance Director, documents component functional testing and component upgrade dedication to perform the safety functions required by the Documented Safety Analysis (DSA) for detecting a leak. In addition, since the components were QAL designated as ENHANCED instead of FULL (i.e., graded application per the ESHQ's GQA procedure), upgrade by Engineering's CGD procedure was not required by Business Service's PoI procedure.

The purpose and scope of Engineering's CGD procedure, dated September 20, 2002, stated "This procedure establishes the dedication process, dedication requirements and related responsibilities for the use of commercial grade items in SC [safety class] or SS applications for Hanford Tank Farm Contractor managed nuclear facilities." Based on the quality assurance (QA) graded approach, the purpose and scope was changed in December 2003 to address the use of commercial grade items as safety components and having a Quality Assurance Level (QAL) designation of FULL, in SC or SS applications. A March 2006 revision, which was in effect during the TFLAN and HMI upgrade dedications, contained the same purpose and scope as the December 2003 version. The system engineer reviewed the March 2006 version for applicability and found that the procedure only applied to QAL designation of FULL. Since the TFLAN and HMIs were QAL designated as ENHANCED, the Engineering's CGD procedure did not apply. Therefore, CGI upgrade documentation was not completed. The system engineer exited the procedure and added the designated components to the safety equipment list (SEL).

The genesis for the December 2003 revision to Engineering's CGD procedure was the result of a July 2003 problem evaluation request (PER-2003-2888) that identified an inconsistency between Business Service's PoI procedure and Engineering's CGD procedure following issuance of a revision to ESHQ's GQA procedure. The PER originator identified that a clarification to the CGI process was required to potentially reduce the volume of material requiring upgrade dedication paperwork. In addition, the PER originator stated that there were several months of discussion between Quality Assurance and Engineering management on this topic. However, the management personnel who were involved with the discussions and the procedure change are no longer with Tank Farms. Engineering's CGD procedure was revised December 2003 which added the QAL designation of FULL to the Purpose/Scope.

Engineering's CGD procedure was revised on April 24, 2008, to address component QAL designations of FULL and ENHANCED. Corrective actions to evaluate and revise the CGI dedication process have been assigned to address this causal factor. In addition, a compensatory measure has been assigned to address the interim period until the evaluation and revisions have been completed.

Direct Cause

The direct cause of this event was the documentation required to upgrade the MCS monitoring function only components (HMI, TFLAN) to SS was not completed per the QAPD (A5B2C07).

The documentation required for upgrade of the TFLAN and HMI components to safety significant was not prepared and issued (root cause) in accordance with the QAPD (i.e., ASME NQA-1). On December 16, 2006, the 241-AY-102 to 241-AN-106 waste transfer was the first to utilize the MCS monitoring function only components to satisfy the waste transfer leak detection safety function LCO 3.1.1. Since the components used to provide the leak detection do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This failure to complete an ACTIONS statement within the required time limit to meet an LCO was the TSR violation. Since then, many double-shell tank (DST) waste transfers have relied on these components to

satisfy the safety function and therefore, a legacy issue exists.

The CGD procedure was revised on April 24, 2008, to address component QAL designations of FULL and ENHANCED. Corrective actions have been assigned to address the direct cause.

Contributing Causes

There were two less than desirable conditions that possibly aggravated the event, or assisted in allowing the event to occur, but could not be demonstrated as being capable of preventing the event if the conditions were not present at the time of the event.

The first contributing cause occurred when components were added to the SEL. This addition does not indicate an evaluation of individual components to meet the SEL requirements has been completed (A3B2C05 and A3B3C05).

This contributing cause has two parts:

The first part occurred on December 14, 2006, when the unreviewed safety question determination (USQD TF 06 1657 D) for operation of the AY/AZ MCS (monitoring functions only), which included an evaluation of the 'Operate Monitor and Control System HMI in WTA Mode' and 'Respond at Alarms at MCS HMI Stations (Draft)' procedures was issued.

It states that "Project W-314 has installed a new Monitoring and Control System (MCS) and this system (monitoring functions only) is being turned over on a farm-by-farm basis. The 'change' being evaluated in this USQD is operational acceptance and actual operation (monitoring functions only) of the MCS." The USQD states that the SEL has been revised to encompass alarm monitoring with the AY/AZ MCS as follows: (1) Specific AY/AZ MCS components addressed in the SEL include PLCs, HMIs, HMI alarms, MCS Computer Software (both HMI personal computer software and PLC software) and TFLAN and (2) Management of MCS Computer Software as safety significant is addressed.

In discussions with the USQ evaluator, he used the fact that (1) he was a member of the Joint Test Review Group which had reviewed the Project W 314 testing documentation and (2) that the AY/AZ MCS components had been added to the SEL to determine that the components must already meet safety significant criteria listed in the SEL.

The second part involves the Configuration Control section of the "Subsystem and Component Level Safety Equipment List for Tank Farms Safety Systems" (RPP-8792) document which states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In discussions with many different people (e.g., engineers, managers), there is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner states that the SEL is a 'requirements' document (i.e., only lists the requirements and does not ensure component compliance).

The root cause corrective actions will address this contributing cause. In addition, a corrective action from the root cause analysis for the potential for waste transfer pumps to overpressure SSC (positive USQ) will revise the SEL process to comprehensively determine and document SSC safety function performance requirements and evaluation of safety significant SSCs which supports addressing this contributing cause.
(ref. occurrence report EM-RP--CHG-TANKFARM-2005-0005)

The second contributing cause involved inadequate traceability of upgrade dedication documentation for installed components (A4B1C01 and A5B3C02).

On November 18, 2008, the 219-S to SY-101 transfer was initiated. During the transfer, the Office of River Protection contacted the Base Operations manager about a potential TSR violation due to the TFLAN and HMIs

being general service instead of safety significant. This began a search for the upgrade dedication paperwork. On November 20, 2008, when the documentation could not be found, a TSR Violation was declared. However, on December 31, 2008, the upgrade dedication letters for 241-AY/AZ and 241-SY MCS (monitoring function only) were found in an engineering letter book. Component upgrade documentation must be easily traced back to the specific component and readily available.

However, upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, -AW, and -AP was probably never completed due to changes in personnel and engineering roles and responsibilities. During employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.

Corrective actions have been assigned to address this contributing cause.

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23. Evaluation (by Facility Manager/Designee):

A Justification for Continued Operation (JCO) was required to be developed based on the generic issues identified with the Tank Farm commercial grade items dedication process. The JCO demonstrated that despite the uncertainties in the commercial grade items dedication process and documentation, there was reasonable assurance that the safety-significant systems satisfied the safety function(s), functional requirement(s) and performance criteria documented in the Tank Farms Documented Safety Analysis and posed no undue risk to the co-located worker, worker, or the public.

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24. Is Further Evaluation Required?: No

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25. Corrective Actions
Local Tracking System Name: Problem Evaluation Request

1. Provide interim direction with revised requirements for procurement of safety significant Structure, System, or Components and commercial grade item dedications. This action addresses the root cause. Objective Evidence: Issued management directive. Actionee: Nelson, Eric A

Target Completion Date: 02/12/2009	**Tracking ID:** WRPS-PER-2008-0279.1

2. Revise TFC-PLN-02, Quality Assurance Program Description, to ensure that commercial grade item dedication is required for safety significant Structure, System, or Components not procured from an evaluated supplier. This action addresses the root cause. Objective Evidence: Revised TFC-PLN-02 Actionee: Shugars, David L

Target Completion Date: 06/08/2009	**Tracking ID:** WRPS-PER-2008-0279.2

3. Revise TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance, to ensure that commercial grade item dedication is required for safety significant Structure, System, or Components not procured from an evaluated supplier. This action addresses the root cause. Objective Evidence: Revised TFC-ESHQ-Q_ADM-C-01 Actionee: Nelson, Eric A

Target Completion Date: 06/08/2009	**Tracking ID:** WRPS-PER-2008-0279.3

4. Revise TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, to ensure that commercial grade item dedication is required for safety significant Structure, System, or Components not procured from an evaluated supplier. This action addresses the root cause. Objective Evidence: Revised TFC-ENG-DESIGN-C-15 Actionee: Nelson, Eric A

Target Completion Date: 06/08/2009	**Tracking ID:** WRPS-PER-2008-0279.4

5. Revise TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials), to ensure that commercial grade item dedication is required for safety significant Structure, System, or Components not procured from an evaluated supplier. This action addresses the root cause. Objective Evidence: Revised TFC-BSM-CP_CPR-C-06 Actionee: Robinson, John M

Target Completion Date: 06/08/2009	**Tracking ID:** WRPS-PER-2008-0279.5

6. Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component. This action addresses the second contributing cause. Objective Evidence: Revised TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, and TFC-ENG-FACSUP-C 23, Equipment Identification and Data Management, procedures Actionee: Cato, Diane M

Target Completion Date: 06/08/2009	**Tracking ID:** WRPS-PER-2008-0279.6

7. Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments. This action addresses the second contributing cause. Objective Evidence: Guidance document Actionee: Nelson, Eric A

Target Completion Date: 06/22/2009	**Tracking ID:** WRPS-PER-2008-0279.7

8. Develop training material on the revised commercial grade item dedication process. This action addresses the root cause and the first and second contributing causes. Objective Evidence: Training material on revised commercial grade item dedication process Actionee: Keith, Lloyd J

Target Completion Date: 07/13/2009	**Tracking ID:** WRPS-PER-2008-0279.8

9. Train Engineering and QA personnel on the revised commercial grade item dedication process developed in corrective action WRPS-PER-2008-0279.8. Objective Evidence: Completed training rosters with 90% completion of Engineering and QA personnel Actionee: Keith, Lloyd J

Target Completion Date: 10/06/2009	**Tracking ID:** WRPS-PER-2008-0279.9

10. Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in Letter, W. J. Johnson, WRPS, to S. J. Olinger, ORP, Contract No. DE-AC27-08RV14800 - Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues, WRPS 0900098, dated January 16, 2009. This action addresses the root cause. Objective Evidence: Letter documenting evaluation and/or revision, as required, of commercial grade item dedication records included in letter WRPS-0900098 Actionee: Cato, Diane M

Target Completion Date: 10/06/2009	**Tracking ID:** WRPS-PER-2008-0279.10

11. Perform an End Point effectiveness assessment to verify completion of actions. Following completion of actions: 1) Review training material to ensure issues were captured 2) Interview for retention of training information personnel (10 Engineers and 5 QA) who attended training 3) Review recently completed commercial grade item documentation (minimum of 2 packages) for compliance to revised process Objective Evidence: Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board Actionee: Knight, Mark A

Target Completion Date: 01/01/2010	**Tracking ID:** WRPS-PER-2008-0279.11

12. Prepare and approve Commercial Grade Item (CGI) Dedication forms for the Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMI) components. This action addresses the direct cause. Objective Evidence: Issue CGI Dedication forms for the TFLAN and HMI components Actionee: Roberts, Mark A

Target Completion Date: 02/10/2009	**Tracking ID:** WRPS-PER-2008-0279.12

26. Lessons Learned:

Application of a graded approach may not be appropriate in all instances. In this particular event, a graded approach was applied to an NQA-1 requirement for commercial grade items upgrade dedication. This is not a gradable process per NQA-1. It must be very clear and well understood when a graded approach can and cannot be applied. Additionally, record copy documentation must be traceable to the specific component and easily accessible. Proving that a component will meet critical characteristics and satisfy the required safety function is only as good as the documentation shows. If the documentation cannot be easily retrieved and traceable to a specific component, then the proof of compliance never existed.

27. Similar Occurrence Report Numbers:

EM-ORO--BJC-K25WASTMAN-2008-0001
NA--LSO-LLNL-LLNL-2005-0012

28. User-defined Field #1:

NOC LIKE '3A2' AND ALLNARRATIVES.TEXT LIKE 'COMMERCIAL GRADE ITEMS'

29. User-defined Field #2:

Problem Evaluation Request (PER) WRPS-PER-2008-0279

30. HQ Keyword(s):

01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control
01C--Inadequate Conduct of Operations - Violation of Authorization Basis Elements
12A--EH Categories - Authorization Basis
14D--Quality Assurance - Documents and Records Deficiency
14E--Quality Assurance - Work Process Deficiency

31. HQ Summary:

The Monitoring and Control System (MCS), designed to provide monitoring of leak detection systems and pump interlocks, was put into operation in 2006 without the required qualification documentation for two components. Therefore these cannot be considered OPERABLE under the "Transfer Leak Detection System" LCO. As a result, failure to meet the LCO is a violation of the Tank Farm Technical Safety Requirement. Existing Hanford Tank Farm facilities and systems have been restored or upgraded to ensure that the Tank Farm infrastructure will be able to support near term waste feed delivery and disposal system and continue safe management of tank waste.

32. DOE Facility Representative Input:

This report has been briefed to the ORP Site Manager by the Facility Representative and is being approved with her concurrence.

Entered by: WILLIAMSON, BRANDON Date: 03/04/2009

33. DOE Program Manager Input:

34. Approvals:

Approved by: Knight, Mark A, Facility Manager/Designee
Date: 02/19/2009
Telephone No.: (509) 373-1199

Approved by: WILLIAMSON, BRANDON, Facility Representative/Designee
Date: 03/04/2009
Telephone No.: (509) 373-2649

EM-RP--WRPS-TANKFARM-2008-0002 UPDATE

Occurrence Report

After 2003 Redesign

Tank Farms

(Name of Facility)

Nuclear Waste Operations/Disposal

(Facility Function)

Hanford Site — Washington River Protection Solutions, LLC

(Site) (Contractor)

Name: Knight, Mark A
Title: Manager, Base Operations Engineering **Telephone No.:** (509) 373-1199

(Facility Manager/Designee)

Name: WATERS, SHAUN F
Title: OPERATIONS SPECIALIST **Telephone No.:** (509) 373-3457

(Originator/Transmitter)

Name: **Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: EM-RP--WRPS-TANKFARM-2008-0002

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

2. Report Type and Date: UPDATE

	Date	Time
Notification:	11/21/2008	16:23 (ETZ)
Initial Update:	12/30/2008	11:32 (ETZ)
Latest Update:	02/02/2009	12:43 (ETZ)
Final:		(ETZ)

3. Significance Category: 2

4. Division or Project: Washington River Protection Solutions, LLC (WRPS)

5. Secretarial Office: EM - Environmental Management

6. System, Bldg., or Equipment: Monitoring and Control/Tank Farms/Waste Transfer

7. UCNI?: No

8. Plant Area: 200 East/West

9. Date and Time Discovered: 11/20/2008 11:15 (PTZ)

10. Date and Time Categorized: 11/20/2008 12:15 (PTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
11/20/2008	12:20 (PTZ)	Ross, W. E.	WRPS
11/20/2008	12:20 (PTZ)	Sorensen, R. C.	DOE-ORP
11/20/2008	12:30 (PTZ)	Trump, G. D.	ONC
11/20/2008	12:45 (PTZ)	Owen, P. L.	WRPS

13. Subject or Title of Occurrence:

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

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14. Reporting Criteria:

3A(2) - Any violation or noncompliance of a Hazard Category 1, 2, or 3 nuclear facility's Technical Safety Requirement (or Operational Safety Requirement) Limiting Control Setting, Limiting Condition for Operation, Administrative Control, or Surveillance Requirement.

Exception: An event consisting solely of a surveillance test performed after the prescribed surveillance period, and in which the equipment was found to be capable of performing its specified safety function. (See separate criterion for late surveillance tests below).

---

15. Description of Occurrence:

The Monitoring and Control System (MCS), designed to provide monitoring of leak detection systems and pump interlocks, was acquired through Project W-314 as a Safety Significant system for automatic waste transfer pump shutdown. The documentation required to upgrade two components of the MCS, the Tank Farm Local Area Network (TFLAN) and the Human Machine Interface (HMI), to Safety Significant were not prepared and issued. Transfers since 2006, when MCS was put into operation, have relied on these components to perform a safety function required by the "Transfer Leak Detection System" limiting condition for operation (LCO).

Therefore, the legacy issue was the equipment was put into operation without the required qualification documentation. Since the components were used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the "Transfer Leak Detection System" LCO. As a result, failure to meet the LCO is a violation of the Tank Farm Technical Safety Requirement.

Project W-314, Tank Farm Restoration and Safe Operation Upgrades, restored/upgraded existing Hanford Tank Farm facilities and systems to ensure that the Tank Farm infrastructure will be able to support near term waste feed delivery and disposal system and continue safe management of tank waste.

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16. Is Subcontractor Involved? No

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17. Operating Conditions of Facility at Time of Occurrence:

Does not apply.

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18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

---

19. Immediate Actions Taken and Results:

Red Arrow issued placing a restriction on performing transfers that rely on the Project W-314 Monitoring and Control System (MCS) leak detection until upgrade documentation and associated corrective actions are complete.

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20. ISM:

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21. Cause Code(s):

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22. Description of Cause:

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23. Evaluation (by Facility Manager/Designee):

UPDATE 2/2/2009

This UPDATE is being submitted to extend submittal of this occurrence report to 02/19/2009. Additional processing time is necessary to prepare for and accommodate FINAL report review/comment and approval.

A further UPDATE or FINAL REPORT will be submitted no later than 02/19/2009.

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24. Is Further Evaluation Required?: Yes

If YES - Before Further Operation? No

By whom? Knight, Mark A

By when?

---

25. Corrective Actions
Local Tracking System Name: Problem Evaluation Request

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26. Lessons Learned:

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27. Similar Occurrence Report Numbers:

---

28. User-defined Field #1:

29. User-defined Field #2:

Problem Evaluation Request (PER) WRPS-PER-2008-0279

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30. HQ Keyword(s):

01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control
01C--Inadequate Conduct of Operations - Violation of Authorization Basis Elements
12A--EH Categories - Authorization Basis
14D--Quality Assurance - Documents and Records Deficiency
14E--Quality Assurance - Work Process Deficiency

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31. HQ Summary:

The Monitoring and Control System (MCS), designed to provide monitoring of leak detection systems and pump interlocks, was put into operation in 2006 without the required qualification documentation for two components. Therefore these cannot be considered OPERABLE under the "Transfer Leak Detection System" LCO. As a result, failure to meet the LCO is a violation of the Tank Farm Technical Safety Requirement. Existing Hanford Tank Farm facilities and systems have been restored or upgraded to ensure that the Tank Farm infrastructure will be able to support near term waste feed delivery and disposal system and continue safe management of tank waste.

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32. DOE Facility Representative Input:

---

33. DOE Program Manager Input:

EM-RP--WRPS-TANKFARM-2008-0002 NOTIFICATION

Occurrence Report
After 2003 Redesign

Tank Farms

(Name of Facility)

Nuclear Waste Operations/Disposal

(Facility Function)

Hanford Site — Washington River Protection Solutions, LLC

(Site) (Contractor)

Name: Knight, Mark A
Title: Manager, Base Operations Engineering **Telephone No.:** (509) 373-1199

(Facility Manager/Designee)

Name: WATERS, SHAUN F
Title: OPERATIONS SPECIALIST **Telephone No.:** (509) 373-3457

(Originator/Transmitter)

Name: **Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: EM-RP--WRPS-TANKFARM-2008-0002

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

2. Report Type and Date: NOTIFICATION

	Date	Time
Notification:	11/21/2008	16:23 (ETZ)
Initial Update:		(ETZ)
Latest Update:		(ETZ)
Final:		(ETZ)

3. Significance Category: 2

4. Division or Project: Washington River Protection Solutions, LLC (WRPS)

5. Secretarial Office: EM - Environmental Management

6. System, Bldg., or Equipment: Monitoring and Control/Tank Farms/Waste Transfer

7. UCNI?: No

8. Plant Area: 200 East/West

9. Date and Time Discovered: 11/20/2008 11:15 (PTZ)

10. Date and Time Categorized: 11/20/2008 12:15 (PTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
11/20/2008	12:20 (PTZ)	Ross, W. E.	WRPS
11/20/2008	12:20 (PTZ)	Sorensen, R. C.	DOE-ORP
11/20/2008	12:30 (PTZ)	Trump, G. D.	ONC
11/20/2008	12:45 (PTZ)	Owen, P. L.	WRPS

13. Subject or Title of Occurrence:

Project W-314 Waste Transfer Monitoring and Control System Components Do Not Have Required Safety Significant Qualification Documentation

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14. Reporting Criteria:

3A(2) - Any violation or noncompliance of a Hazard Category 1, 2, or 3 nuclear facility's Technical Safety Requirement (or Operational Safety Requirement) Limiting Control Setting, Limiting Condition for Operation, Administrative Control, or Surveillance Requirement.

Exception: An event consisting solely of a surveillance test performed after the prescribed surveillance period, and in which the equipment was found to be capable of performing its specified safety function. (See separate criterion for late surveillance tests below).

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The Monitoring and Control System (MCS), designed to provide monitoring of leak detection systems and pump interlocks, was acquired through Project W-314 as a Safety Significant system for automatic waste transfer pump shutdown. The documentation required to upgrade two components of the MCS, the Tank Farm Local Area Network (TFLAN) and the Human Machine Interface (HMI), to Safety Significant were not prepared and issued. Transfers since 2006, when MCS was put into operation, have relied on these components to perform a safety function required by the "Transfer Leak Detection System" limiting condition for operation (LCO).

Therefore, the legacy issue was the equipment was put into operation without the required qualification documentation. Since the components were used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the "Transfer Leak Detection System" LCO. As a result, failure to meet the LCO is a violation of the Tank Farm Technical Safety Requirement.

Project W-314, Tank Farm Restoration and Safe Operation Upgrades, restored/upgraded existing Hanford Tank Farm facilities and systems to ensure that the Tank Farm infrastructure will be able to support near term waste feed delivery and disposal system and continue safe management of tank waste.

---

16. Is Subcontractor Involved? No

---

17. Operating Conditions of Facility at Time of Occurrence:

Does not apply.

---

18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

---

19. Immediate Actions Taken and Results:

Red Arrow issued placing a restriction on performing transfers that rely on the Project W-314 Monitoring and Control System (MCS) leak detection until upgrade documentation and associated corrective actions are complete.

---

20. ISM:

---

21. Cause Code(s):

---

22. Description of Cause:

---

23. Evaluation (by Facility Manager/Designee):

---

24. Is Further Evaluation Required?: Yes

If YES - Before Further Operation? No

By whom? Knight, Mark A

By when?

25. Corrective Actions
Local Tracking System Name: Problem Evaluation Request

26. Lessons Learned:

27. Similar Occurrence Report Numbers:

28. User-defined Field #1:

29. User-defined Field #2:

Problem Evaluation Request (PER) WRPS-PER-2008-0279

30. HQ Keyword(s):

31. HQ Summary:

32. DOE Facility Representative Input:

33. DOE Program Manager Input:

ADDENDUM TO RCA FOR WRPS-PER-2008-0279

Analyst: _____ Date: 5/14/09
Greg Hanson

Responsible Manager: _____ Date: 5/14/09
Mark Knight

ESRB: _____ Date: 5/14/09
Bill Johnson

5/19/09

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1.0 EXECUTIVE SUMMARY

The purpose of this addendum is to review weaknesses in the Commercial Grade Item (CGI) Dedication process as identified in U.S. Department of Energy – Office of River Protection (ORP) letter 09-ESQ-114 and to ensure the Root Cause Analysis (RCA) for Problem Evaluation Request (PER) WRPS-PER-2008-0279 sufficiently addresses each weakness and if not, identify any additional causes and provide the necessary corrective actions to prevent recurrence.

On April 8, 2009, the Tank Operations Contractor (TOC) received U.S. Department of Energy – Office of River Protection (ORP) letter, 09-ESQ-114, from T. M. Williams to M. Armstead, "Contract Number DE-AC27-08RV14800 – Need for Additional Washington River Protection Solutions LLC (WRPS) Action to Address Weaknesses in Tank Farm's Implementation of Quality Assurance (QA) Program Requirements for Commercial Grade Item Dedication (CGID)." This letter stated that ORP had determined that the TOC CGID program had several implementation weaknesses and that one of the examples to support this conclusion was the following:

> "The TOC has not identified adequate root, direct and contributing causes for the initial failure discussed in Reference 1 to perform CGID in accordance with DOE and WRPS requirements and for subsequent issues listed by WRPS in its Noncompliance Tracking System report on this subject."

Reference 1 is ORP letter from J.C. Poniatowski to M. Armstead, WRPS, "Washington River Protection Solutions LLC Surveillance Report S-09-ESQ-TANKFARM-001 – Tank Farm Implementation of Quality Assurance Program (QAP) Requirements for Commercial Grade Item Dedication (CGID for Tank Farm Use," 09-ESQ-006, dated January 22, 2009. This surveillance identified two findings:

- S-09-ESQ-TANKFARM-001-F01 – Dedication packages supporting two CGIDs did not provide sufficient objective evidence that the items met design criteria to be upgraded to a safety related component to perform a safety related function.
- S-09-ESQ-TANKFARM-001-F02 – Engineering and Quality Assurance (QA) personnel who perform CGID activities are not trained on process implementation.

Therefore, an analysis of the weaknesses that support these findings was completed. In addition, the Extent of Condition in the RCA stated that the corrective actions assigned to address RC-01 would also address WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436. Each of these PERs were again reviewed to ensure they were addressed by the RCA

Conclusions

The overall conclusion determined that RC-01 was the root cause for the ORP identified findings and extent of condition PERs (WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436). One new contributing cause on less than adequate training, CC-03, was identified during the analysis. However, corrective actions assigned to RC-01 will address CC-03.

CC-03 – Less than adequate training on the CGI Dedication process has resulted in less than adequate CGI Dedication packages.

Discussions with several engineers, including the Cognizant Engineer, indicated that they have not had any formal training on the CGI process. They remembered some informal presentations that had occurred about 5 to 8 years ago but nothing "formal." In addition, ORP interviewed engineering and Quality Assurance (QA) personnel who perform CGI Dedication activities and came to the same conclusion (S-09-ESQ-TANKFARM-001-F02).

Additional Corrective Actions

- None Required.

2.0 PROBLEM

In Office of River Protection (ORP) letter, 09-ESQ-114, the following issue was identified:

> The TOC has not identified adequate root, direct and contributing causes for the initial failure discussed in ORP letter 09-ESQ-006 to perform CGID in accordance with DOE and WRPS requirements and for subsequent issues listed by WRPS in its Noncompliance Tracking System report on this subject.

A review of the weaknesses that support this issue will be completed to ensure the (1) Root Cause Analysis (RCA) sufficiently addresses each weakness, (2) identify any additional causes not previously determined in the RCA and (3) if necessary, provide additional corrective actions.

3.0 BACKGROUND

On April 8, 2009, the Tank Operations Contractor (TOC) received U.S. Department of Energy – Office of River Protection (ORP) letter, 09-ESQ-114, from T. M. Williams to M. Armstead, "Contract Number DE-AC27-08RV14800 – Need for Additional Washington River Protection Solutions LLC (WRPS)

Action to Address Weaknesses in Tank Farm's Implementation of Quality Assurance (QA) Program Requirements for Commercial Grade Item Dedication (CGID)." This letter stated that ORP had determined that the TOC CGID program had several implementation weaknesses and that one of the examples to support this conclusion was the following:

> "The TOC has not identified adequate root, direct and contributing causes for the initial failure discussed in Reference 1 to perform CGID in accordance with DOE and WRPS requirements and for subsequent issues listed by WRPS in its Noncompliance Tracking System report on this subject."

Reference 1 is ORP letter from J.C. Poniatowski to M. Armstead, WRPS, "Washington River Protection Solutions LLC Surveillance Report S-09-ESQ-TANKFARM-001 – Tank Farm Implementation of Quality Assurance Program (QAP) Requirements for Commercial Grade Item Dedication (CGID for Tank Farm Use," 09-ESQ-006, dated January 22, 2009. This surveillance identified two findings:

- S-09-ESQ-TANKFARM-001-F01 – Dedication packages supporting two CGIDs did not provide sufficient objective evidence that the items met design criteria to be upgraded to a safety related component to perform a safety related function.
- S-09-ESQ-TANKFARM-001-F02 – Engineering and Quality Assurance (QA) personnel who perform CGID activities are not trained on process implementation.

S-09-ESQ-TANKFARM-001-F01 identified two CGI Dedication packages that did not provide sufficient objective evidence that items met design criteria to be upgraded to a safety related component to perform a safety related function. These were CGI-03029, *2-Inch, 2-Way Ball Valves* and CGI-03034, *Stop Pushbutton/Contact Block.*

S-09-ESQ-TANKFARM-001-F02 was based on interviews with engineering, operations and QA personnel.

A review of the weaknesses that support these two findings was completed to ensure the RCA sufficiently addresses each weakness and if not, identify any additional causes and provide the necessary corrective actions to prevent recurrence. In addition, the Extent of Condition in the RCA stated that the corrective actions assigned to address RC-01 would also address WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436. Each of these PERs will be reviewed to ensure they are addressed by the RCA.

The description from each PER is listed below:

WRPS-PER-2008-0421 – WRPS-PER-2008-0279 Root Cause Analysis noted the following: Clarification is needed on the procurement and Commercial Grade Item Dedication process for Safety components.

RPP-8792, *Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems*, identifies specific QALs for components of safety systems as FULL, ENHANCED and COMMERCIAL QALs. Tank Farm administrative procedures use these same terms to identify the requirements for procuring General Service and Safety Significant items without requiring ENHANCED and COMMERCIAL items to be procured from an evaluated supplier.

TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication*, was changed last April to include the CGI dedication of ENHANCED Quality Safety Significant items. Items have been procured and accepted for use in Safety Significant (SS) service applications to QL 3 (Enhanced) and QL 0 (Commercial) without having critical characteristics verified by the "formal" CGI process."

WRPS-PER-2008-0435 – During an ORP audit it was identified that CGI Upgrade dedication process had not been completed as required in TFC-PLN-02, *Quality Assurance Program Description*, Section 7.2.13. Additionally, TFC-ENG-DESIGN-C-15 may not adequately implement the CGI upgrade process. This condition effects Valves AN06A-WT-V101, AN06A-WT-V102 and AN06A-WT-V103 to be installed in AN-06A pump pit.

TFC-ENG-DESIGN-C-15 requires dedication of commercially procured items to be used as safety significant components having QAL designation of FULL or ENHANCED. This is to ensure that the safety functions of safety significant items are preserved (i.e., the commercial grade item is suitable for use its intended application and that the item will perform its safety function.)"

WRPS-PER-2008-0436 – During an ORP audit it was identified that CGI Upgrade dedication process had not been completed as required in TFC-PLN-02, Section 7.2.13. Additionally, TFC-ENG-DESIGN-C-15 may not adequately implement the CGI upgrade process. This condition affects valves POR209-WT-V-101 through POR209-WT-V-120 and POR209-WT-V-123 through POR209-WT-V-126 installed into POR209-WT-DB-001 Diversion Box.

TFC-ENG-DESIGN-C-15 requires dedication of commercially procured items to be used as safety significant components having QAL designation of FULL or ENHANCED. This is to ensure that the safety functions of safety

significant items are preserved (i.e., the commercial grade item is suitable for use its intended application and that the item will perform its safety function).

4.0 TIMELINE

This section provides several timelines. There is an overall timeline from declaration of the Tank Farm Local Area Network/Human Machine Interface (TFLAN/HMI) CGI Dedication issues through the Root Cause Analysis (RCA) to issuance of the ORP Findings (09-ESQ-006) and WRPS correspondence related to the findings. In addition, a separate timeline is provided for each of the CGI Dedication packages that supported the ORP Findings and PERs WRPS-PER-2008-0421, -0435 and -0436. The below discussion on the timelines provides an overview of the key activities and conditions associated with each issue In some instances, the timeline is more detailed with newer information than was discovered during the initial investigation.

- Timeline for RCA for WRPS-PER-2008-0279

  - On November 20, 2008 at 1115 hrs, an issue with safety significant upgrade documentation for the TFLAN and HMI was documented in problem evaluation request WRPS-PER-2008-0279.

    The documentation required for upgrading the TFLAN and HMI components to Safety Significant were not prepared and issued.

  - On November 20, 2008 at 1215 hrs – Categorized a Group 3A(2) SC-2 for TSR Violation. W-314 Monitoring and Control System (MCS) HMI leak detection documentation required to upgrade the TFLAN and HMI components to safety significant were not prepared and issued. Discovery 1115 hrs. [Shift Manager (SM) Logbook]

  - On November 21, 2008, WRPS-PER-2008-0279 was designated as a Significant PER (SigPER) which initiated a RCA.

  - On December 3, 2008, NTS-ORP-WRPS-TANKFARM-2008-0001, *Lack of Safety Significant Qualification Documentation for MCS Components Represents a TSR Violation*, was filed on the TFLAN/MCS TSR violation.

  - On January 16, 2009, WRPS letter from W. J. Johnson to S. J. Olinger, ORP, "Contract No. DE-AC27-08RV14800 – Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in Light of Commercial Grade Dedication Issues," WRPS-0900098, was issued.

- On January 18, 2009, the JCO was approved per ORP letter 09-NSD-005, S. J. Olinger to W. J. Johnson, WRPS, "Contract No. DE-AC27-08RV14800 – Approval of Justification for Continued Operation (JCO) using Existing Safety-Significant Systems during Planned Activities in Light of Commercial Grade Dedication (CGD) Issues."

- On January 20, 2009, the JCO was implemented per letter WRPS-0900110, "Safety Basis Implementation for Justification for Continued Operation (JCO) using Existing Safety Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues – No Field Implementation."

- On January 22, 2009, ORP letter from J. C. Poniatowski to M. Armstead, WRPS, "Washington River Protection Solutions LLC Surveillance Report S-09-ESQ-TANKFARM-001 – Tank Farm Implementation of Quality Assurance Program (QAP) Requirements for Commercial Grade Item Dedication (CGID) for Tank Farm Use," 09-ESQ-006, was issued. This surveillance identified the following two findings:

    - S-09-ESQ-TANKFARM-001-F01 – Dedication packages supporting two CGIDs did not provide sufficient objective evidence that the items met design criteria to be upgraded to a safety related component to perform a safety related function.
    - S-09-ESQ-TANKFARM-001-F02 – Engineering and Quality Assurance (QA) personnel who perform CGID activities are not trained on process implementation.

- On January 28, 2009, RCA Report for WRPS-PER-2008-0279 was issued.

- On January 28, 2009, a request was sent by WRPS to NTS internal approval authorities to amend NTS-ORP-WRPS-TANKFARM-2008-0001 to identify a programmatic issue found during the RCA. This request was approved, and on January 30, 2009, NTS-ORP-WRPS-TANKFARM-2008-0001, *Lack of Safety Significant Qualification Documentation for MCS Components Represents a TSR Violation*, was amended to include the following statement:

    > During the conduct of the root cause analysis, a programmatic issue was identified in that items have been procured and accepted for use in Safety Significant (SS) service applications to Quality Level 3 (Enhanced) or Quality Level 0 (Commercial Grade) without having critical characteristics verified by the formal CGI Dedication process meeting the requirements of NQA-1. Quality Levels 1 and 2 (Full Quality) have been appropriately qualified for use in SS service applications through proper implementation of the CGI process.

- On February 24, 2009, WRPS issued a response to ORP Surveillance (09-ESQ-006) per WRPS-0900295, "Response to Washington River Protection Solutions LLC Surveillance Report S-09-ESQ-TANKFARM-001 – Tank Farm Implementation of Quality Assurance Program Requirements for Commercial Grade Item Dedication for Tank Farm Use."

  This response states that causal analysis and corrective actions are covered in the scope of SigPER WRPS-PER-2008-0279.

- On April 8, 2009, the Tank Operations Contractor (TOC) received U.S. Department of Energy – Office of River Protection (ORP) letter, 09-ESQ-114, from T. M. Williams to M. Armstead, "Contract Number DE-AC27-08RV14800 – Need for Additional Washington River Protection Solutions LLC (WRPS) Action to Address Weaknesses in Tank Farm's Implementation of Quality Assurance (QA) Program Requirements for Commercial Grade Item Dedication (CGID)."

  This letter stated that ORP had determined that the TOC CGID program had several implementation weaknesses and that one of the examples to support this conclusion was the following: The TOC has not identified adequate root, direct and contributing causes for the initial failure discussed in letter 09-ESQ-006 to perform CGID in accordance with DOE and WRPS requirements and for subsequent issues listed by WRPS in its Noncompliance Tracking System report on this subject.

- On April 15, 2009, TOC letter WRPS-0900549 was sent in response to ORP letter 09-ESQ-114 and identified the following action: Develop and issue an addendum to the original Root Cause Analysis Report WRPS-PER-2008-0279, and associated corrective action plan to include inadequate implementation of the CGD process as noted in WRPS-PER-2008-0435 and -0436. The original causal analysis only dealt with failure to perform a CGD when required.

  This action resulted in the performance of this causal analysis.

- <u>Timeline for S-09-ESQ-TANKFARM-001-F01 Identified Weaknesses</u>

  <u>CGI-03029, *2-Inch, 2-Way Ball Valves*</u>

  - On December 22, 2003, TFC-ENG-DESIGN-C-15, Rev A-5 was issued. This revision incorporated the concept of TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance" to the CGI Dedication process. This was the first time that the CGI Dedication process only applied to Quality Assurance Level (QAL) = FULL.

    TFC-ESHQ-Q_ADM-C-01, Rev A-0, was issued on 10/1/03 in support of Documented Safety Analysis (DSA) Implementation.

This revision only talked to "using a graded approach concept." It did not state that items less than QAL = FULL did not require CGI Dedication. It wasn't until Rev A-1 (1/21/05) that it implied the CGI Dedication process was not required for items less than QAL = FULL.

- On May 23, 2007, TFC-ENG-DESIGN-C-15, Rev A-11, *Commercial Grade Item Upgrade Dedication*, procedure was issued.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.
  - Attachment A – CGI Dedication Form Instructions:
    - Section 4 – Part/Component Safety Classification: The item's classification is listed as SC, SS or general service. No further actions within this procedure are required for general service items, or for SC/SS items with a QAL designation less than FULL (i.e., Enhanced or Commercial)..

- On February 1, 2008, RPP-8792, Rev 15, *Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems*, was issued. It states for Double-Valve Isolation (DVI) valve assemblies that the QAL = ENHANCED.

  Therefore, CGI dedication of the 2-Inch, 2-Way Flowtek Ball Valves, V-101 and V-102 was not required. However, the Cognizant Engineer stated there were many discussions on whether or not a CGI dedication should be completed anyway. They decided that the "conservative approach" and also a good way to capture some valve-specific information would be to complete a CGI dedication form.

- On February 11, 2008, initial review and approvals were completed for CGI-03029. This allows the responsible organization to proceed with critical characteristic verification.

- On March 19, 2008, TFC-ENG-DESIGN-C-15, Rev A-12, "Commercial Grade Item Upgrade Dedication," was issued.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.

- On April 15, 2008, final critical characteristic verifications were completed by Hyline per CGI-03029. The jumper and valves were leak checked satisfactorily.

- On April 24, 2008, TFC-ENG-DESIGN-C-15, Rev A-13, "Commercial Grade Item Upgrade Dedication," was issued. The Purpose & Scope were revised to the following:
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL or ENHANCED, in SC or SS applications. For existing or new items used in SC or SS applications.

- On August 15, 2008, CGI-03029 final approval signatures were completed.

  The reason the final approval signatures were completed about four months after completion of the final critical characteristic verifications was that the jumper was modified to include a pressure relief device, with drain. Therefore, the valves were disassembled, to protect the seals during jumper welding, and then reassembled. Another leak check was performed following the modification which was satisfactory.

- On September 3, 2008, RPP-8792, Rev 18 was issued and it still listed the DVI valve assemblies as QAL = ENHANCED.

- NOTE: Per the Cognizant Engineer, CGI-03029 was revised to address the issues identified in the ORP Surveillance but was never approved and issued. This was about the same time the JCO was implemented which revised the process and CGI's were no longer required for these valves.

<u>CGI-03034, *STOP Pushbutton/Contact Block*</u>

- On May 23, 2007, TFC-ENG-DESIGN-C-15, Rev A-11, "Commercial Grade Item Upgrade Dedication," procedure was issued.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.

- On January 9, 2008, issued ECN-725166 R0 to provide 480 V power to a temporary controller for the 241-AZ-102 pump motor.

  The Safety Designation for the ECN (Block 13) is "General Service."

- On February 1, 2008, RPP-8792, Rev 15, "Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems," identified two items on the temporary controller as Safety Significant. These items are the motor contactor and the Stop Pushbutton.

This resulted in the need to revise ECN-725166 and initiate a CGI dedication.

- On May 12, 2008, initial review and approvals were completed for CGI-03034. This allows the responsible organization to proceed with critical characteristic verification.

  CGI-03034, Section 4 states the component is Safety Significant and the minimum Quality Assurance Level (QAL) is FULL per RPP-8792.

- On May 12, 2008, issued ECN-72166 R2 which changed the Safety Designation for the ECN (Block 14) to "Safety Significant." It also changed the "Design Verification Required" (Block 27) from "No" to "Yes."

  The ECN states that because of the fact that when the original purchase of POR219-EDS-MSTR-102 took place, it was as a QAL3 part whereby the parts that will be installed to perform this modification are QAL0. Therefore, an "Upgrade of Parts" interoffice letter needed to be generated. This upgrade of parts to be used for this modification is documented on interoffice memo 71B60-BHT-08-002 that has various QAIP's associated with it, and is attached to the ECN. Also, two CGI dedication forms (CGI-03033 & 03034) have been prepared.

- On June 5, 2008, final critical characteristic verifications were completed by Quality Control personnel satisfactorily.

- On June 6, 2008, CGI-03034 final approval signatures were completed.

- <u>Timeline for S-09-ESQ-TANKFARM-001-F02 Identified Weakness</u>

  - A Timeline is not applicable to this Finding.

- <u>Timeline for WRPS-PER-2008-0421</u>

  - On December 17, 2008, WRPS-PER-2008-0421 was initiated. It states the following: "WRPS-PER-2008-0279 root cause analyses noted the following: Clarification is needed on the procurement and commercial grade item dedication process for safety components."

  - On January 19, 2009, WRPS-PER-2008-0421 was closed based on a "roll-up" into WRPS-PER-2008-0279.

  - On January 28, 2009, RCA Report for WRPS-PER-2008-0279 was issued.

- On February 4, 2009, a clarification of the CGI Dedication process was issued in the form of TFC-MD-062, *Interim Direction with Revised Requirements for Procurement of Safety Significant SSCs and Commercial Grade Item Dedication.*

- <u>Timeline for WRPS-PER-2008-0435</u>

  NOTE: This PER addresses CGI-03029 [Valves AN06A-WT-V101 and AN06A-WT-V102] and CGI-03030 [Valve AN06A-WT-V103]. The Timeline for CGI-03029 is documented above. This Timeline will only address CGI-03030.

  - On May 23, 2007, TFC-ENG-DESIGN-C-15, Rev A-11, "Commercial Grade Item Upgrade Dedication," procedure was issued.
    - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.
    - Attachment A – CGI Dedication Form Instructions:
      - Section 4 – Part/Component Safety Classification: The item's classification is listed as SC, SS or general service. No further actions within this procedure are required for general service items or for SC/SS items with a QAL designation less than FULL (i.e., Enhanced or Commercial).

  - On February 1, 2008, RPP-8792, Rev 15, "Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems," was issued. It states for Double-Valve Isolation (DVI) valve assemblies that the QAL = Enhanced.

    Therefore, CGI dedication of the 2-Inch, 3-Way Flowtek Ball Valve V-103 is not required. The Cognizant Engineer stated there were many discussions on whether or not a CGI dedication should be completed. They decided that the "conservative approach" and also a good way to capture some valve-specific information would be to complete a CGI dedication form.

  - On February 11, 2008, initial review and approvals were completed for CGI-03030. This allows the responsible organization to proceed with critical characteristic verification.

  - On March 19, 2008, TFC-ENG-DESIGN-C-15, Rev A-12, "Commercial Grade Item Upgrade Dedication," was issued.
    - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components and having a QAL

designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.

- On April 15, 2008, final critical characteristic verifications were completed by Hyline per CGI-03030. The jumper and valve were leak checked satisfactorily.

- On April 24, 2008, TFC-ENG-DESIGN-C-15, Rev A-13, *Commercial Grade Item Upgrade Dedication*, was issued. The Purpose & Scope were revised to the following:
    - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL or ENHANCED, in SC or SS applications. For existing or new items used in SC or SS applications.

- On August 15, 2008, CGI-03030 final approval signatures were completed.

  The reason the final approval signatures were completed about four months after completion of the final critical characteristic verifications was that the jumper was modified to include a pressure relief device, with drain. Therefore, the valves were disassembled to protect the seals during jumper welding and then reassembled. Another leak check was performed following the modification which was satisfactory.

- On September 3, 2008, RPP-8792, Rev 18 was issued and it still listed the DVI valve assemblies as QAL = ENHANCED.

NOTE: Per the Cognizant Engineer, CGI-03030 was revised to address the issues identified in the ORP Surveillance but was never approved and issued. This was about the same time the JCO was implemented which revised the process and CGI's were no longer required for these valves.

- On December 30, 2008, Nonconformance Report, CH-08-NCR-039, was issued.

  The NCR was issued based on the same description as WRPS-PER-2008-0435.

- On December 30, 2008, WRPS-PER-2008-0435 was issued.

- <u>Timeline for WRPS-PER-2008-0436</u>

  - On December 22, 2003, TFC-ENG-DESIGN-C-15, Rev A-5 was issued. This revision incorporated the concept of TFC-ESHQ-Q_ADM-C-01, *Graded*

Quality Assurance to the CGI Dedication process. This was the first time that the CGI Dedication process only applied to QAL = FULL.

TFC-ESHQ-Q_ADM-C-01, Rev A-0, was issued on 10/1/03 in support of DSA Implementation. This revision only talked to "using a graded approach concept." It did not state that items less than QAL = FULL did not require CGI Dedication. It wasn't until Rev A-1 (1/21/05) that it implied the CGI Dedication process was not required for items less than QAL = FULL.

- On March 30, 2006, TFC-ENG-DESIGN-C-15, Rev A-10, *Commercial Grade Item Upgrade Dedication*, procedure was issued.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.
  - Attachment A – CGI Dedication Form Instructions:
    Section 4 – Part/Component Safety Classification: The item's classification is listed as SC, SS or general service. No further actions within this procedure are required for general service items, or for SC/SS items with a QAL designation less than FULL (i.e., Enhanced or Commercial)

- On January 17, 2007, RPP-8792, Rev 11, "Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems," was issued. It states for Double-Valve Isolation (DVI) valve assemblies that the QAL = ENHANCED.

  Therefore, CGI dedication of the Safety Significant valves was not required. However, the Cognizant Engineer stated they knew the valves were going to be Safety Significant but there were many discussions on whether or not a CGI dedication should be completed anyway. They decided that the "conservative approach" would be to complete a CGI dedication.

- On May 8, 2007, initial review and approvals were completed for CGI-03021. This allows the responsible organization to proceed with critical characteristic verification.

- On May 23, 2007, TFC-ENG-DESIGN-C-15, Rev A-11, "Commercial Grade Item Upgrade Dedication," procedure was issued.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.

- On June 28, 2007, final critical characteristic verifications were completed by Quality Control personnel per CGI-03021. The jumper and valves were leak checked satisfactorily.

- On July 26, 2007, RPP-8792, Rev 13, "Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems," was issued. It states for Double-Valve Isolation (DVI) valve assemblies that the QAL = ENHANCED.

- On August 22, 2007, CGI-03021 final approval signatures were completed.

  TFC-ENG-DESIGN-C-15 did not require CGI Dedication for QAL = ENHANCED until April 24, 2008. Therefore, CGI Dedication was not required for these valves per TFC-ENG-DESIGN-C-15.

- On December 30, 2008, Nonconformance Report, CH-08-NCR-040, was issued.

  The NCR was issued based on the same description as WRPS-PER-2008-0436.

- On December 30, 2008, WRPS-PER-2008-0436 was issued.

5.0 PROBLEM ANALYSIS

A causal analysis was performed for each of the CGID packages identified in the ORP Surveillance Findings. In addition, analysis was performed on WRPS-PER-2008-0421, -0435 and -0436. The results of the analysis are as follows:

S-09-ESQ-TANKFARM-001-F01 Identified Weaknesses

CGI-03029, *2-Inch, 2-Way Ball Valves*

Discussion	As stated in RC-01, the impacts from introduction of the graded QA process into the CGI dedication process were not adequately assessed, recognized, or understood. TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance,* Rev A-0, was issued on 10/1/03 in support of DSA Implementation. This revision only talked to "using a graded approach concept." It did not state that items less than QAL = FULL did not require CGI Dedication. On December 22, 2003, TFC-ENG-DESIGN-C-15, Rev A-5 was issued. This revision incorporated the concept of TFC-ESHQ-Q_ADM-C-01 to the CGI Dedication process. This was the first time that the CGI Dedication process only applied to QAL = FULL. It wasn't until January 21, 2005 that TFC-

	ESQH-Q_ADM-C-01,Rev A-1 (1/21/05) implied that the CGI Dedication process was not required for items less than QAL = FULL. As a result, TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication* only applied to Quality Assurance Level (QAL) = FULL up until Revision A-13 on April 24, 2008. RPP-8792, *Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems* designated the DVI Valve Assemblies as ENHANCED. Therefore, the CGI dedication process did not apply. However, a "conservative approach" was applied and CGI-03029 was initiated. The initial review and approval to proceed with critical characteristic verification was on February 11, 2008. The verification of the critical characteristics was completed at the jumper fabrication shop (Hyline) on April 15, 2008. Final CGI-03029 approvals were on August 15, 2008 following jumper modification and retesting which was after issuance of TFC-ENG-DESIGN-C-15, Rev A-13. In addition, discussions with several engineers, including the Cognizant Engineer, indicated that they have not had any formal training on the CGI process. They remembered some informal presentations that had occurred about 5 to 8 years ago but nothing "formal." An engineer also mentioned that when Rev A-13 to TFC-ENG-DESIGN-C-15 was approved, it wasn't very well advertised. He stated that an "implementation" period may have been appropriate for this significant change. <u>Summary:</u> Introduction of the graded QA process (TFC-ESHQ-Q_ADM-C-01) into the CGI dedication process (RC-01) resulted in CGI-03029 not meeting the requirements of TFC-PLN-02, *Quality Assurance Program Description (QAPD).* In addition, less than adequate training on completion of the CGI Dedication form resulted in a less than adequate CGI dedication package.
Additional Failure Mode Category	A6 – Training Deficiency, B1 – No Training Provided, CO3 – Work incorrectly considered "skill of the craft."

CGI-03034, *STOP Pushbutton/Contact Block*

Discussion	ECN-725166 was initially (R0) issued with a Safety Designation of "General Service." Once the "Stop Pushbutton" was designated as Safety Significant per RPP-8792, CGI-3034 was initiated and ECN-725166 revised (R2). The material, which had been purchased as QAL0, needed to be upgraded for use in a QAL3 application. This resulted in an interoffice memo and Quality Assurance Inspection Plans (QAIP) in accordance with

	TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials).* In addition, the "Stop Pushbutton" was QAL = FULL in a Safety Significant application which generated CGI-03034 in accordance with TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication.* Therefore, compliance with the CGI Dedication process was evident. However, completion of the CGI Dedication form was less than adequate, as stated in the ORP Surveillance. In addition, discussions with several engineers, including the Cognizant Engineer, indicated that they have not had any formal training on the CGI Dedication process. They remembered some informal presentations that had occurred about 5 to 8 years ago but nothing "formal." <u>Summary:</u> The proper CGI Process was applied as directed by TFC-BSM-CP_CPR-C-06 and TFC-ENG-DESIGN-C-15. However, less than adequate training resulted in a less than adequate CGI dedication package.
Additional Failure Mode Category	A6 – Training Deficiency, B1 – No Training Provided, CO3 – Work incorrectly considered "skill of the craft."

S-09-ESQ-TANKFARM-001-F02 Identified Weakness

Discussion	Discussions with several engineers, including the Cognizant Engineer, indicated that they have not had any formal training on the CGI Dedication process. They remembered some informal presentations that had occurred about 5 to 8 years ago but nothing "formal." An engineer also mentioned that when Rev A-13 to TFC-ENG-DESIGN-C-15 was approved, it wasn't very well advertised. He stated that an "implementation" period may have been appropriate. Nobody else interviewed had this same opinion. <u>Summary:</u> Less than adequate training on the CGI Dedication process has resulted in less than adequate CGI Dedication packages.
Additional Failure Mode Category	A6 – Training Deficiency, B1 – No Training Provided, CO3 – Work incorrectly considered "skill of the craft."

WRPS-PER-2008-0421, *Commercial Grade Item Dedication Process*

Discussion	WRPS-PER-2008-0421 requests "clarification of the procurement and CGI Dedication process for safety components." This was not directly identified

	as a cause at the completion of the RCA for WRPS-PER-2008-0279. However, interim guidance was provided in the form of TFC-MD-062 and the corrective actions associated with RC-01 will address this issue. Summary: No further action required.
Additional Failure Mode Category	None.

WRPS-PER-2008-0435, *2-Inch, 2-Way and 3-Way Ball Valves*

Discussion	WRPS-PER-2008-0435 documents CGI Dedication issues with valves AN06A-WT-V101 (CGI-03029), AN06A-WT-V102 (CGI-03029) and AN06A-WT-V103 (CGI-03030). The Discussion above which addressed CGI-03029 is the same discussion for CGI-03030. Summary: See CGI-03029, *2-Inch, 2-Way Ball Valves* above.
Additional Failure Mode Category	None.

WRPS-PER-2008-0436, *POR209-WT-V-101 Thru V-120 and V-123 Thru V-126*

Discussion	As stated in RC-01, the impacts from introduction of the graded QA process into the CGI dedication process were not adequately assessed, recognized, or understood. TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance,* Rev A-0, was issued on 10/1/03 in support of DSA Implementation. This revision only talked to "using a graded approach concept." It did not state that items less than QAL = FULL did not require CGI Dedication. On December 22, 2003, TFC-ENG-DESIGN-C-15, Rev A-5 was issued. This revision incorporated the concept of TFC-ESHQ-Q_ADM-C-01 to the CGI Dedication process. This was the first time that the CGI Dedication process only applied to QAL = FULL. It wasn't until January 21, 2005 that TFC-ESQH-Q_ADM-C-01,Rev A-1 (1/21/05) implied that the CGI Dedication process was not required for items less than QAL = FULL. As a result, TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication* only applied to Quality Assurance Level (QAL) = FULL up until Revision A-13 on April 24, 2008.

	RPP-8792, *Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems* designated the DVI Valve Assemblies as ENHANCED. Final CGI-03021 approvals were on August 22, 2007, eight months before issuance of TFC-ENG-DESIGN-C-15, Rev A-13. Therefore, the CGI dedication process did not apply. However, a "conservative approach" was applied and CGI-03021 was initiated. Summary: Introduction of the graded QA process (TFC-ESHQ-Q_ADM-C-01) into the CGI dedication process (RC-01) resulted in CGI-03021 not meeting the requirements of TFC-PLN-02, *Quality Assurance Program Description (QAPD).*
Additional Failure Mode Category	None.

5.1 Overall Conclusions

The overall conclusion determined that RC-01 was the root cause for the ORP identified findings and extent of condition PERs (WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436). One additional contributing cause on less than adequate training, CC-03, was identified during the analysis. However, corrective actions assigned to RC-01 will address CC-03.

6.0 ADDITIONAL CONTRIBUTING CAUSE STATEMENT

CC-03 – Less than adequate training on the CGI Dedication process has resulted in less than adequate CGI dedication packages.

Discussions with several engineers, including the Cognizant Engineer, indicated that they have not had any formal training on the CGI process. They remembered some informal presentations that had occurred about 5 to 8 years ago but nothing "formal." In addition, ORP interviewed engineering and Quality Assurance (QA) personnel who perform CGI Dedication activities and came to the same conclusion (S-09-ESQ-TANKFARM-001-F02).

Corrective actions assigned to RC-01 address this contributing cause.

7.0 CORRECTIVE ACTIONS

No Additional Corrective Actions Are Required.

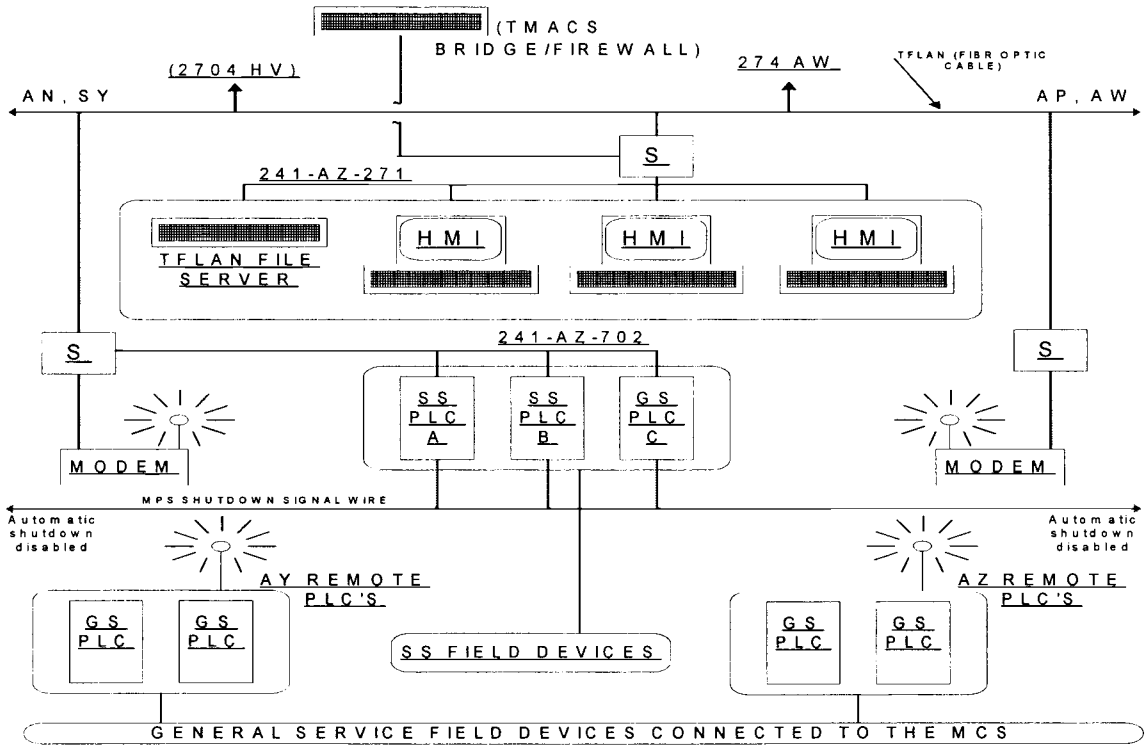
ROOT CAUSE ANALYSIS REPORT

WRPS-PER-2008-0279

January 27, 2009

W-314 Monitoring and Control System (MCS) Not Fully-Qualified as Safety Significant

Figure 1. AY/AZ MCS



Analyst: _____ Date: 1/26/09
Greg Hanson

Responsible Manager: _____ For Date: 01/26/09
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ESRB: _____ for Date: 1/28/9
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ATTACHMENTS

Attachment A — Event and Causal Factor Chart

Attachment B — Event and Causal Factor Discussion

Attachment C — Causal Factor to Corrective Action Cross Walk

Acronym/Definitions Table

CGD Commercial Grade Dedication

CGI Commercial Grade Item

Commercial QA – Level of controls fro those items, services, or processes where, based on the evaluation of risk or nuclear safety, no additional quality controls beyond the providers published or stated attributes of the item, service, or process is required.

ENHANCED QA – Level of controls for those items, services, or processes where, based on the evaluation of risk or nuclear safety, additional controls beyond the providers published or stated attributes of the item, service, or process are needed to verity critical attributes.

FULL QA – Level of controls applied for items, services, or processes that are commensurate with the controls invoked under ASME NQA-1 or other appropriate national consensus standard.

HMI Human Machine Interface

JCO Justification for Continued Operation

LCO Limiting Condition of Operation

MCS Monitoring and Control System

QA Quality Assurance

QAL Quality Assurance Level

SC/SS Safety Class/Safety Significant

SM Shift Manager

SSC Safety Significant Components

TFLAN Tank Farm Local Area Network

TSR Technical Safety Requirement

1.0 EXECUTIVE SUMMARY

Project W-314 Monitoring and Control system (MCS) was designed to provide monitoring of leak detection and interlocks to shutdown pumps. This system was acquired through Project W-314 as a Safety Significant system for automatic pump shutdown. The original design had the following major components: Pump Shutdown, Leak Detection, Programmable Logic Controllers (PLCs), Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMIs). The monitoring function was originally intended to be a general service function and the pump control function was the safety significant function.

Implementation: All components had been installed for the monitoring and control portion of the system. Due to the magnitude of the testing and the transfer schedule, a decision was made in October 2006 to allow operators to use the MCS system to monitor leak detection and initiate manual pump shutdown. This leak detection and monitoring system is identified under the Technical Safety Requirements LCO 3.1.1, *Transfer Leak Detection System*. This change in the implementation of the project changed the general service safety designation of the components (TFLAN, HMI) to safety significant for monitoring and indication. The MCS system including the HMI and TFLAN were thoroughly tested prior to acceptance.

Issue: The documentation required to upgrade the TFLAN and HMI components to Safety Significant were not prepared and issued. Transfers since 2006, when the system was put into operation have relied on these components to perform a safety function required by LCO 3.1.1. Therefore, the legacy issue was that equipment was put into operation without the required qualification documentation. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This was a Technical Safety Requirement (TSR) violation under criterion 5.4.1.b.2.

This report documents the results of an investigation to perform a causal analysis on the circumstances surrounding qualification documentation and to also perform an assessment of activities to identify Human Performance Improvement opportunities to improve the reliability of future operations.

Conclusions

The overall conclusions determined that the impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized or understood. Indications are that there were many discussions between QA and Engineering on applying a graded approach to the procurement

of materials and CGI dedication process. However, a graded approach should not have been applied to the NQA-1 requirement for CGI dedication.

Root Cause – The Root Cause of this event was the impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized, or understood.

TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication,* Rev A, dated September 20, 2002, stated "This procedure establishes the dedication process, dedication requirements and related responsibilities for the use of commercial grade items in SC or SS applications for Hanford Tank Farm Contractor managed nuclear facilities." Based on the QA graded approach, Rev A-5 was changed to state "This procedure ... for the use of commercial grade items **as safety components and having a Quality Assurance Level (QAL) designation of FULL,** in SC or SS applications ... facilities." The System Engineer reviewed TFC-ENG-DESIGN-C-15 for applicability and found that the procedure only applied to QAL designation of FULL. Since the TFLAN and HMIs were QAL designated as ENHANCED, TFC-ENG-DESIGN-C-15 did not apply. Therefore, CGI Upgrade documentation was not required or completed.

Direct Cause - The Direct Cause of this event was the documentation required to upgrade the MCS monitoring function only components (HMI, TFLAN) to SS was not completed per the QAPD.

The documentation required for upgrade of the TFLAN and HMI components to safety significant was not prepared and issued (See RC-01) in accordance with the QAPD (i.e., NQA-1). On December 16, 2006 the 241-AY-102 to 241-AN-106 transfer was the first transfer to utilize the MCS monitoring function only components to satisfy the safety function of LCO 3.1.1. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This was the initial TSR violation under criterion 5.4.1.b.2. Since then, many DST waste transfers have relied on these components to satisfy the safety function and therefore a legacy issue exists.

CC-01 – When components are added to the SEL (RPP-8792), this does not indicate an evaluation of individual components to meet the SEL requirements has been completed.

RPP-8792, Section "Configuration Control" states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In discussions with many different people (e.g., engineers, managers) there is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner

states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance).

CC-02 – The traceability of upgrade dedication documentation for installed components is less than adequate (LTA).

On November 18, 2008, the 219-S to SY-101 transfer was initiated. During the transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being General Service instead of Safety Significant. This began a search for the upgrade dedication paperwork. On November 20, 2008, when the documentation could not be found, a TSR Violation was declared. However, on December 31, 2008 the upgrade dedication letters for 241-AY/AZ and 241-SY MCS (monitoring function only) were found in an engineering letter book. Upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, -AW, and -AP was probably never completed due to changes in personnel and engineering roles and responsibilities. Component upgrade documentation must be easily traced back to the specific component and readily available and during employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.

Corrective Actions

- Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications.
- Revise TFC-PLN-02, *Quality Assurance Program Description,* TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance,* TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication,* and TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier.
- Develop training material on the revised CGI dedication process.
- Train Engineering and QA personnel on the revised CGI dedication process.
- Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in the JCO.
- Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. (Completed 12/17/08)
- Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. (Completed 1/7/09)
- Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component.

- Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments.
- Perform an End Point effectiveness assessment.

2.0 PROBLEM STATEMENT

Documentation was not prepared to upgrade the Tank Farms Local Area Network (TFLAN) and Human Machine Interface (HMI) components of Project W-314 Monitoring and Control system (MCS) that were procured as commercial grade items and used as Safety Significant components. Transfers conducted while crediting the components as Safety Significant, to satisfy TSR LCO 3.1.1, *Transfer Leak Detection Systems*, were performed in violation of Tank Farms Technical Safety Requirements, HNF-SD-WM-TSR-006, criterion 5.4.1.b.2.

3.0 BACKGROUND

Project W-314 Monitoring and Control system (MCS) was designed to provide monitoring of leak detection and interlocks to shutdown pumps. This system was acquired through Project W-314 as a Safety Significant system for automatic pump shutdown. The original design had the following major components: Pump Shutdown, Leak Detection, Programmable Logic Controllers (PLCs), Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMIs). The monitoring function was originally intended to be a general service function and the pump control function was the safety significant function.

Original Design and Safety Classification: Original design (leak detection/pump shutdown) was to communicate through analog signals (PLC to PLC) the status of the system and shutdown the transfer pumps. This limited the safety function to pump shutdown contactors, leak detectors and PLCs. Documentation was generated to support the qualification of these components.

Implementation: All components had been installed for the monitoring and control portion of the system. Due to the magnitude of the testing and the transfer schedule, a decision was made in October 2006 to allow operators to use the MCS system to monitor leak detection and initiate manual pump shutdown. This leak detection and monitoring system is identified under the Technical Safety Requirements LCO 3.1.1, *Transfer Leak Detection System*. This change in the implementation of the project changed the general service safety designation of the components (TFLAN, HMI) to Safety Significant for monitoring and indication. The MCS system including the HMI and TFLAN were thoroughly tested prior to acceptance.

After discovery of the issue, a formal investigation was chartered to perform a cause analysis on how and why the qualification documentation was not completed and to also perform an assessment of activities to identify Human Performance Improvement opportunities to improve the reliability of future engineering practices.

4.0 TIME LINE

The below discussion on the timeline associated with the event provides an overview of the key activities and conditions associated with procurement and safety classification of Project W-314 MCS components. In some instances, the timeline is more detailed with newer information than was discovered during the initial investigation.

- In FY 2000, installation of the TFLAN network was initiated by LMSI for Project W-314 per Contract #4851, Release 100 Requisition #51080. The statement of work for this contract requisition identified the TFLAN network and HMIs as General Service (GS), which was appropriate for the design at the time. The HMIs were procured by the Project from Dell Corporation as site-standard personal computers.

  The MCS was originally designed to facilitate waste transfers by allowing a waste transfer route to be selected and then monitoring the critical instruments on the route (e.g., pit leak detectors) and initiating automatic shutdown of the waste transfer pump as required (e.g., a pit leak detector alarms or fails). Other instruments, unrelated to waste transfers, were also connected to the MCS to facilitate monitoring of the associated parameter. Per the original plan, the MCS would have been turned over as a complete system (with full monitoring and automatic shutdown capability), and the TSR safety function requirement would have been satisfied by the automatic shutdown capability [i.e., Safety Significant leak detectors and PLCs per the Facility Safety Analysis Report (FSAR)]. The MCS monitoring capability (i.e., HMI, TFLAN) could then be installed as GS.

- In October 2003, RPP-13033, *Tank Farms Documented Safety Analysis* (DSA) and HNF-SD-WM-TSR-006, *Tank Farms Technical Safety Requirements* (TSR) were implemented.

  In FY 2000, the PLCs and Leak Detectors were designed and purchased by Project W-314 as Safety Significant per the FSAR. Per the DSA, they were still classified as Safety Significant. The TFLAN and HMIs were designed and purchased as GS and remained GS per the DSA if not used for TSR monitoring/alarm response.

- In June 2005, Project W-314 electrical upgrades, which supported the MCS upgrades, were shutdown for all the Double-Shell Tank (DST) farms.

- The following procedures/plans, that address Commercial Grade Items (CGI), were in effect at the time of MCS (monitoring functions only) turnover:
    - TFC-PLN-02, *Quality Assurance Program Description*, Rev C-1, Effective Date: April 17, 2006.
        - The QAPD captures and integrates into a single cohesive QA program the requirements, such as ASME NQA-1, that apply to the TFC.
        - Requires upgrade dedication for commercial grade items used in safety applications.
    - TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance*, Rev A-3, Effective Date: October 23, 2006.
        - Describes the graded application of TFC-PLN-02 requirements to items, services, and processes.
        - The procedure states the responsible engineer shall determine and specify the appropriate quality assurance controls for the item, service or process. To aid in this determination, the procurement quality level designated in the Safety Equipment List for items associated with safety class or safety significant SSCs can be used.
        - This procedure also defines Commercial (no additional controls), ENHANCED (additional controls) and FULL (controls commensurate with ASME NQA-1 or other national standard) quality assurance.
        - This graded approach was applied to the procurement of items and the commercial dedication upgrade process.

    - TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)*, Rev F-11, Effective Date: September 12, 2006.
        - States COMMERCIAL is QL-0 (Passport); ENHANCED is QL-3 (Passport); FULL is QL-1 or QL-2 (Passport).
        - Engineer to determine QAL for item being procured using:
            - Work Management System Equipment/Asset database
            - RPP-RPT-29160 for Safety Significant items or ADM-C-01.
            - Engineer to determine if item requires CGI Upgrade for use in safety application (Refer to Section 4.5 for guidance). NOTE: Items procured as Commercial QAL (QL-0) may not be upgraded for ENHANCED QAL or FULL QAL unless specifically approved by the CH2M HILL designated Chief Engineer and by the Quality Assurance director in accordance with Section 4.5.
            - Section 4.5, *Commercial Grade Items*

- Step 4.5.1 – Evaluate whether a commercial grade item is (1) Not subject to design or specification requirements unique to nuclear facilities, (2) Used in applications other than nuclear facilities, and (3) Ordered from the manufacture/supplier on the basis of specifications set forth in the manufacturer's published product description.
- Step 4.5.2 – If the item meets the above criteria, procure as a commercial grade item. NOTE: For items designated FULL QAL in safety class and safety significant SSCs, it shall be demonstrated as suitable for use in its intended application. This requires a documented engineering evaluation to establish and verify critical characteristics. Critical design characteristics and appropriateness for use shall be verified (e.g., inspection, testing). Refer to DESIGN-C-15.
- Step 4.5.3 – Identify the commercial grade item and its critical characteristics in an approved design document.
- Ste- 4.5.4 – If necessary, apply an alternate CGI ...which performs the intended function and meets design requirements applicable to both replaced item and its application prior to delivery.
- Step 4.5.5 – If "existing" material without receipt inspection (tagging) will be installed in an application requiring ENHANCED or FULL QAL (QL-1, 2 or 3) designation, upgrade that material in accordance with the following:
    - If applicable, generate QAIP specifying inspection criteria.
    - Generate an upgrade letter referencing the QAIP and obtain approval by the CH2M HILL Chief Engineer and by the Quality Assurance Director.
    - Perform the inspection per QAIP.
    - For items to be upgraded to FULL QAL only, complete the upgrade via the CGI upgrade process (TFC-ENG-DESIGN-C-15).
- Step 4.5.6 – If "existing" ENHANCED QAL (QL-3) procurement assigned material will be installed in an application requiring FULL QAL Safety Class or Safety Significant designation, that material shall be upgraded via the CGI process.

- TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication*, Rev A-10, Effective Date: March 30, 2006.
  - Purpose & Scope: Establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications. For existing or new items used in SC or SS applications.
  - (NOTE: No requirement to get Chief Engineer buy-off in this procedure)
  - Attachment A – CGI Dedication Form Instructions:
    - Section 3 – Type of Replacement: After the item has been classified as SC or SS, and determined to be assigned a QAL designation as FULL, an evaluation is performed to determine if any form, fit, function or materials of construction have changed between the installed and the replacement item(s), unless it is a new application for a modification or project.
    - Section 4 – Part/Component Safety Classification: The item's classification is listed as SC, SS or general service. No further actions within this procedure are required for general service items, or for SC/SS items with a QAL designation less than FULL (i.e., Enhanced or Commercial).

- In October 2006, a Performance Based Incentive (PBI-2), *Double-Shell Tank Upgrades*, was approved which included the incentive to complete the W-314 Master Pump Shutdown System (MPSS)/Monitoring and Control System (MCS) upgrades for 242-AN, AP, AW and SY Tank Farms and turnover to operations by September 30, 2008.

  Per the original plan, the MCS would have been turned over as a complete system (with full monitoring and automatic shutdown capability). Complete turnover of the MCS for all tank farms (i.e., no transfer activities) required an outage of 9 to 12 months to complete. Due to the impacts of the required outage, a decision was made to turnover the MCS (monitoring functions only) on a farm-by-farm basis for FY 2007. Turnover of the automatic shutdown capability of the MCS would be scheduled for FY 2008. A review of the Transfer Schedule determined the priority for MCS (monitoring functions only) turnover and showed the first planned transfer was from 241-AY Tank Farm.

- Based on the decision to turnover only the monitoring functions of the MCS, the TFLAN and HMIs would need to be "upgraded" from general service to safety significant per the DSA.

  TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)" and TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication" were reviewed for applicability.

- On December 11 – 15, 2006, an internal review of the documentation supporting the initial operational use of the MCS software was performed and documented on a management observation program (MOP) checklist. The review revealed the following:
    - HNF-6780, *Project Development Specification for Monitoring and Control System* had not been revised to reflect the turnover of the MCS (monitoring function only) for 241-AY/AZ Tank Farm.
        - On December 13, 2006, HNF-6780 was revised per ECN-724362 to include the MCS (monitoring function only) for 241-AY/AZ Tank Farms.
    - RPP-13778, *Requirements Verification Report (RVR) for Phase 2, AY/AZ Tank Farm Upgrades* had not been revised to reflect the turnover of the MCS (monitoring function only) for 241-AY/AZ Tank Farm.
        - On December 14, 2006, RPP-13778 was revised per ECN-724363 to include the MCS (monitoring function only) for 241-AY/AZ Tank Farms.

- On December 14, 2006, ECN-724357 was issued to incorporate the Human Machine Interface (HMI) and Programmable Logic Controller (PLC) installed by Project W-314 into the applicable sections of RPP-8792, *Subsystem and Component Level Safety Equipment List for Tank Farm Safety Systems.*

  This ECN states that the MCS components that were added to the SEL are required for monitoring only. It also states that the following equipment "is required for operability of the system" and are QA Level – Enhanced: MCS HMI, MCS PLC, MCS Software and TFLAN.

- On December 14, 2006, Unreviewed Safety Question (USQ) Determination, TF-06-1657-D, *Operation of the AY/AZ MCS (Monitoring Functions Only) and Release of Procedures TO-025-002, "Operate Monitor and Control System HMI in WTA Mode," Rev.A-0 (Draft) and ARP-T-041-00002, "Respond at Alarms at MCS HMI Stations," Rev. A-0 (Draft)* was issued. It states that "Project W-314 has installed a new Monitoring and Control System (MCS) and this system (monitoring functions only) is being turned over on a farm-by-farm basis. The 'change' being evaluated in this USQD is operational acceptance and actual operation (monitoring functions only) of the MCS." The USQD concludes that "operation of the AY/AZ MCS in accordance with procedures TO-025-002 and ARP-T-041-00002 does not constitute an Unreviewed Safety Question and approval authority resides with the contractor."

- On December 15, 2006, ORC-W314MPSS-MCS-01, *Operational Readiness Checklist – Project W-314 Master Pump Shutdown System and Monitoring Control System Upgrades (Monitoring Only)* was completed and released.
    - This included completion of the following procedures:

- TO-025-002, *Operate Monitor and Control System HMI in WTA Mode*, Rev A-0, Issued 12/13/06.
- ARP-T-041-0002, *Respond to Alarms at MCS HMI Stations*, Rev A-0, Issued 12/14/06.
- TF-FT-259-023, *Perform Functional Test for AY/AZ MCS Transfer Leak Detectors,* Rev A-0, Issued 11/22/06. The functional test was completed satisfactorily as stated in ORC-W314MPSS-MCS-01.

  This document states "The monitoring only activities associated with the MPSS and MCS will allow personnel to monitor the transfer of liquid waste between tank farms and between the 200 East and 200 West areas through the Cross Site Transfer Line. No control functions are being turned over at this time. The control functions will be turned over at a later date using different turnover and readiness documents. For the present time the existing MPSS will remain in service.

- On December 16, 2006, initiated a transfer from 241-AY-102 to 241-AN-106. The transfer completed on December 19, 2006 after transferring 484,000 gallons of waste.

  Technical Safety Requirements (TSR) violation occurred upon initiation of the waste transfer (Legacy issue).

- On June 28, 2007, 7T300-GNH-07-018, *Safety Basis Implementation Checklist for Miscellaneous Changes to HNF-SD-WM-TSR-006 and RPP-13033 (Amendment-039)* was issued. Amendment-039 added a description of the W-314 MCS to the Documented Safety Analysis (RPP-13033) in Section 2.4.1.7, *Interlock Systems* and added the following to the boundaries of Section 4.4.7, *Transfer Leak Detection Systems*: "For the W-314 MCS, the safety-significant transfer leak detection system boundary includes the applicable PLCs and HMIs and the Tank Farm Local Area Network."

  The SB Implementation Checklist did not have an action to update the SEL because the SEL had already been updated with the issuance of each USQD for MCS (Monitoring Function only) turnover. Amendment-039 was approved by ORP on June 11, 2007.

- By September 30, 2007 (End of FY 2007), W-314 Monitoring and Control Systems (monitoring function only) were completed, turned over and operational for 241-AY/AZ, 241-SY, 241-AW and 241-AN Tank Farms.

- On October 1, 2007 (FY 2008), funding to complete the MCS (automatic shutdown capability) control function activities and perform turnover was not obtained.

- On December 17, 2007, USQD TF-07-1896-D, *Operation of the AP MCS (Monitoring Functions Only) and Release of Procedure ARP-T-041-00002,*

"Respond to Alarms at MCS HMI Stations," Rev. A-6 (Draft) was issued and released.

- On December 21, 2007, W314-PTD-008, *Project Turnover Document for W-314 Monitoring and Control System (MCS), AP Tank Farm, for Monitoring Only* was issued.

  This completed turnover of the MCS (monitoring function only) for the Double-Shell Tank Farms.

- On September 11, 2008, assessment report 08-ESD-011 REISSUE, *The U.S. Department of Energy, Office of River Protection (ORP)Assessment Report "241-SY-102 to 241-SY-101 Safety Significant Leak Detection System and Monitoring and Control System Assessment," A-08-AMENS-TANKFARM-001* was issued.

  It states an assessment was conducted of the 241-SY-102 to 241-SY-101 safety significant leak detection system and monitoring and control system (MCS) from April 7 through April 11, 2008. The assessment was focused on the MCS control functions. The assessment resulted in four findings and two observations. A-08-AMENS-TANKFARM-001-F04 states "The TFC subcontracted work on safety significant equipment at a quality assurance level lower than required."

- On October 27, 2008, correspondence WRPS-0802562, *Response to the U.S. Department of Energy, Office of River Protection Assessment Report, "241-SY-102 to 241-SY-101 Safety Significant Leak Detection System and Monitoring and Control System Assessment,"* which contained the corrective action plan for each finding, was issued.

  Response to Finding F04 addressed a planned (i.e., future) upgrade activity to the TFLAN which included issuance of a CGI to upgrade the new TFLAN parts for use in a safety significant application.

- On November 17, 2008, completed the functional test, TF-FT-529-001, *Functional Test Liquid Waste Line 5350 and 5351 Leak Detectors,* in preparation of the 219-S Transfer.

- On November 18, 2008, started and completed the 219-S to SY-101 transfer.

  During this transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being General Service instead of Safety Significant.

- On November 20, 2008 at 1115 hrs, an issue with safety significant upgrade documentation for the TFLAN and HMI was documented in problem evaluation request WRPS-PER-2008-0279.

The documentation required for upgrading the TFLAN and HMI components to Safety Significant were not prepared and issued.

- On November 20, 2008 at 1215 hrs – Categorized a Group 3A(2) SC-2 for TSR Violation. W-314 MCS HMI leak detection documentation required to upgrade the TFLAN and HMI components to safety significant were not prepared and issued. Discovery 1115 hrs. [Shift Manager (SM) Logbook]

- On November 20, 2008 at 1440 hrs – Red Arrow Entry: Transfers that rely on the W-314 MCS HMI are prohibited until safety significant upgrade documentation and associated corrective actions are completed (WRPS-PER-2008-0279). [SM Logbook]

5.0 PROBLEM ANALYSIS

The causal analysis performed for the MCS (TFLAN, HMI) upgrade dedication documentation event utilized Change analysis. In addition, Event Causal Factors charting was also employed to compile collected data in chronological order, identify inappropriate actions, determine failure modes, identify/categorize causes and evaluate precursors from a Human Performance perspective (Attachment B). The results of the analysis are as follows:

Root Cause

RC-01	The impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized, or understood.
Discussion	The monitoring functions of the MCS (TFLAN, HMIs), which had been purchased as general service (QAL-3), would need to be "upgraded" to SS per the DSA. TFC-PLN-02, *Quality Assurance Program Description (QAPD)* Rev C, dated April 3, 2006, captures the requirements of ASME NQA-1 which requires upgrade dedication for commercial grade items used in safety applications. The plan did not distinguish between ENHANCED or FULL QAL designation. TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance* Rev A-2, dated September 2, 2005, describes the graded application of TFC-PLN-02 requirements to items, services, and processes and states that for the procurement of items, ENHANCED QAL, a CGI upgrade dedication was not required. The applicable requirements were then implemented through TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)* and TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication.* <u>TFC-BSM-CP_CPR-C-06 Discussion:</u> TFC-BSM-CP_CPR-C-06, Rev F-11, dated September 12, 2006, states for

	"existing" material without receipt inspection (tagging) that will be installed in an application requiring ENHANCED or FULL QAL (QL-1, 2 or 3) designation, upgrade that material in accordance with the following: o If applicable, generate QAIP specifying inspection criteria. o Generate an upgrade letter referencing the QAIP and obtain approval by the CH2M HILL Chief Engineer and by the Quality Assurance Director. o Perform the inspection per QAIP. o For items to be upgraded to FULL QAL only, complete the upgrade via the CGI upgrade process (TFC-ENG-DESIGN-C-15). The existing Project W-314 components (TFLAN, HMI), without receipt inspection (green tagging), were upgraded per interoffice memo 7T600-06-CWJ-001, *Safety Equipment List Components to be Upgraded to Comply with the Tank Farm Documented Safety Analysis RPP-13033, R.1.R.* This memo documents component functional testing; approvals of the Chief Engineer and Quality Assurance Director; and component upgrade dedication to perform the safety functions required by the DSA for detecting a leak. In addition, since the components were QAL designated as ENHANCED instead of FULL (i.e., graded application per TFC-ESHQ-Q_ADM-C-01), upgrade by the CGI process was not required by TFC-BSM-CP_CPR-C-06. <u>TFC-ENG-DESIGN-C-15 Discussion:</u> The Purpose/Scope of TFC-ENG-DESIGN-C-15, Rev A, dated September 20, 2002, stated "This procedure establishes the dedication process, and requirements and related responsibilities for the use of commercial grade items in SC or SS applications for Hanford Tank Farm Contractor managed nuclear facilities." Rev A-5, dated December 22, 2003, changed the Purpose/Scope (i.e., graded application per TFC-ESHQ-Q_ADM-C-01) to "This procedure … for the use of commercial grade items **as safety components and having a Quality Assurance Level (QAL) designation of FULL,** in SC or SS applications … facilities." Rev A-10, dated March 30, 2006, which was in effect during the TFLAN and HMI upgrade dedications, had the same Purpose/Scope as Rev A-5. The System Engineer reviewed TFC-ENG-DESIGN-C-15, Rev A-10 for applicability and found that the procedure only applied to QAL designation of FULL. Since the TFLAN and HMIs were QAL designated as ENHANCED, TFC-ENG-DESIGN-C-15 did not apply. Therefore, CGI Upgrade documentation was not required or completed. The System Engineer exited the procedure and added the designated components to the safety equipment list. PER-2003-2888 identified an inconsistency between the procurement process (i.e., TFC-TFC-BSM-CP_CPR-C-06) and the commercial grade dedication process (i.e., TFC-ENG-DESIGN-C-15) following issuance of a

	revision to TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance*. Discussed these changes with the PER originator who stated that a clarification to the CGI process was required to potentially reduce the volume of material requiring upgrade dedication paperwork. In addition, he stated that there were several months of discussion between QA and Engineering management on this topic. However, the management personnel who were involved with the discussions and the procedure change are no longer with our company. TFC-ENG-DESIGN-C-15 was revised to Rev A-5, which added the QAL designation of FULL to the Purpose/Scope. <u>Summary:</u> The impacts from introduction of the graded QA process (TFC-ESHQ-Q_ADM-C-01) into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized, or understood.
Failure Mode Category	A4 – Management Problem, B5 – Change Management less than adequate (LTA), CO4 – Risks/consequences associated with change not adequately reviewed/assessed.

Direct Cause

DC-01	The documentation required to upgrade the MCS monitoring function only components (HMI, TFLAN) to SS was not completed per the QAPD.
Discussion	The documentation required for upgrade of the TFLAN and HMI components to safety significant was not prepared and issued (See RC-01) in accordance with the QAPD (i.e., NQA-1). On December 16, 2006 the 241-AY-102 to 241-AN-106 transfer was the first transfer to utilize the MCS monitoring function only components to satisfy the safety function of LCO 3.1.1. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This was the initial TSR violation under criterion 5.4.1.b.2. Since then, many DST waste transfers have relied on these components to satisfy the safety function and therefore a legacy issue exists.
Failure Mode Category	A5 – Communication LTA, B2 – Written Communication Content LTA, CO7 – Facts wrong/requirements not correct

Contributing Causes

CC-01	When components are added to the SEL (RPP-8792), this does not indicate an evaluation of individual components to meet the SEL requirements has been completed.
Discussion	This contributing cause has two parts: • On December 14, 2006, Unreviewed Safety Question (USQ)

	Determination, TF-06-1657-D, *Operation of the AY/AZ MCS (Monitoring Functions Only) and Release of Procedures TO-025-002, "Operate Monitor and Control System HMI in WTA Mode," Rev.A-0 (Draft) and ARP-T-041-00002, "Respond at Alarms at MCS HMI Stations," Rev. A-0 (Draft)* was issued. It states that "Project W-314 has installed a new Monitoring and Control System (MCS) and this system (monitoring functions only) is being turned over on a farm-by-farm basis. The 'change' being evaluated in this USQD is operational acceptance and actual operation (monitoring functions only) of the MCS." The USQD states that the SEL has been revised to encompass alarm monitoring with the AY/AZ MCS as follows: (1) Specific AY/AZ MCS components addressed in the SEL include PLCs, HMIs, HMI alarms, MCS Computer Software (both HMI personal computer software and PLC software) and TFLAN and (2) Management of MCS Computer Software as safety significant is addressed. In discussions with the USQ Evaluator, he used the fact that (1) he was a member of the Joint Test Review Group which had reviewed the Project W-314 testing documentation and (2) that the AY/AZ MCS components had been added to RPP-8792, to determine that the components must already meet safety significant criteria listed in the SEL. (A3B3C05) • RPP-8792, Section "Configuration Control" states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In discussions with many different people (e.g., engineers, managers) there is a perception that in order for a component to be listed in the SEL, that component must meet the requirements listed in the SEL. However, the SEL document owner states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance with the requirements). (A3B2C05)
Failure Mode Category	A3 – Human Performance LTA, B3 – Knowledge Base Error, C05 – Incorrect assumption that a correlation existed between two or more facts A3 – Human Performance LTA, B2 – Rule Based Error, C05 – Situation incorrectly identified or represented resulting in wrong rule used

CC-02	The traceability of upgrade dedication documentation for installed components is less than adequate (LTA).
Discussion	On November 18, 2008, the 219-S to SY-101 transfer was initiated. During the transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being General Service instead of Safety Significant. This began a search for the upgrade dedication paperwork. On November 20, 2008, when the documentation could not be

	found, a TSR Violation was declared. However, on December 31, 2008 the upgrade dedication letters for 241-AY/AZ and 241-SY MCS (monitoring function only) were found in an engineering letter book. Component upgrade documentation must be easily traced back to the specific component and readily available. In addition, upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, -AW, and -AP was probably never completed due to changes in personnel and engineering roles and responsibilities. During employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.
Failure Mode Category	A5 – Communications LTA, B3 – Written Communication Not Used, C02 – Not available or inconvenient for use. A4 – Management Problem, B1 – Management Methods LTA, C01 – Management policy guidance/expectations not well-defined, understood or enforced.

5.1 Change Analysis

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
FY 2000: TFLAN, HMI COMPONENTS PURCHASED GS.	Purchase equipment to perform Auto and Manual Shutdown of Pumps when leak detected (HNF-6780, Development Spec for MCS)	Equipment purchased to perform Auto and Manual Shutdown of Pumps when leak detected (HNF-6780, Development Spec for MCS)	None	None
	Purchase equipment to meet FSAR Rqmts: LD, PLCs SS; Auto-shutdown OR Alarm monitoring SS	Equipment purchased met FSAR Rqmts: LD, PLCs and Auto-shutdown SS; Alarm monitoring (HMI, TFLAN) GS	None	None
RPP-13033, *TANK FARM DSA* AND HNF-SD-WM-TSR-006, *TANK FARM TSR* WERE IMPLEMENTED.	MCS equipment to meet DSA Rqmts: LD, PLCs SS; Auto-shutdown OR Alarm monitoring SS	MCS equipment met FSAR Rqmts: LD, PLCs and Auto-shutdown SS; Alarm monitoring (HMI, TFLAN) GS	None	None
W-314 MCS PROJECT SHUTDOWN	W-314 electrical upgrades should have continued.	W-314 electrical upgrades shutdown.	Lost funding to complete electrical upgrades.	None – Higher priority work was funded.
10/01/06, PBI APPROVED TO COMPLETE W-314 MCS PROJECT FOR DST FARMS BY 9/30/08.	Restrict all transfers for 9-12 months to allow completion of W-314 MCS upgrades (Auto-shutdown and monitoring capabilities).	Due to impacts of an extended transfer outage, decided to perform MCS (monitoring function only) turnover on	Would only get monitoring function of MCS on farm-by-farm basis. Auto-shutdown feature would be turned over later.	Since MCS (monitoring function only) would now satisfy the TSR alarm requirements, the alarm monitoring safety functions would have to

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
		farm-by-farm basis in FY 2007.		be upgraded to SS.
	Upgrade MCS monitoring function only (i.e., HMI, TFLAN) from GS to SS	Upgraded MCS monitoring function only (i.e., HMI, TFLAN) from GS to SS per TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)* and TFC-ENG-DESIGN-C-15, *CGI Upgrade Dedication.*	None	TFC-ESHQ-Q_ADM-C-01 applied graded approach for commercial grade dedications to TFC-BSM-CP_CPR-C-06 and TFC-ENG-DESIGN-C-15. TFC-BSM-CP_CPR-C-06 was reviewed and upgrade dedication memo 7T600-06-CWJ-001 was issued. TFC-ENG-DESIGN-C-15 was reviewed and stated "establishes dedication process for the use of commercial grade items as safety components, and having a QAL designation of FULL, in SC or SS applications." Since the TFLAN and HMIs were QAL designated as ENHANCED, TFC-ENG-DESIGN-C-15 did not apply. Therefore, CGI Upgrade

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
				documentation was not required or completed.
	Update RPP-8792, *SEL*, per TFC-ENG-FACSUP-C-23, to include HMI and TFLAN as SS and QAL ENHANCED.	RPP-8792 was updated, per TFC-ENG-FACSUP-C-23, to include HMI and TFLAN as SS and QAL ENHANCED.	None	RPP-8792 was updated per TFC-ENG-FACSUP-C-23. RPP-8792 states "SEL updated as necessary to reflect actual facility configuration and the Safety Basis." There is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance).
DECEMBER 2006: OPERATIONAL READINESS CHECKLIST COMPLETED AND RELEASED	Approve and release Unreviewed Safety Question Determination (USQD) TF-06-1657-D for AY/AZ Tank Farm.	USQD, TF-06-1657-D for AY/AZ Tank Farm was approved and released.	None	The USQD states that RPP-8792 (SEL) has been revised to encompass alarm monitoring with the AY/AZ MCS as

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
				follows: (1) Specific AY/AZ MCS components addressed in the SEL include PLCs, HMIs, HMI alarms, MCS Computer Software (both HMI personal computer software and PLC software) and TFLAN and (2) Management of MCS Computer Software as safety significant is addressed. In discussions with the USQ Evaluator, he used the fact that the AY/AZ MCS components had been added to RPP-8792 to determine that the components must already meet safety significant criteria.
	Approve and release operating procedure TO-025-002.	Operating procedure, TO-025-002, was approved and released.	None	None
	Approve and release alarm response procedure ARP-T-041-0002.	Alarm response procedure, ARP-T-041-0002, was approved and released.	None	None
DECEMBER 2006:	Hindsight: AY-102 to	AY-102 to AN-106	Used MCS monitoring	Hindsight: Initiation of

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
COMPLETED AY-102 TO AN-106 TRANSFER	AN-106 transfer should not have been initiated with MCS monitoring function only.	transfer was completed using the MCS monitoring function only.	function only to satisfy the TSR Safety Function.	the transfer, using the MCS monitoring function only, should not have occurred. However, since the procedures at the time did not require CGI upgrade documentation, recognition that the leak detection system was not OPERABLE, per the TSR, was unrealistic. Personnel thought they had completed all the necessary upgrade documentation.
MCS MONITORING FUNCTION ONLY FOR THE OTHER DST FARMS (SY, AN, AW, AP) WAS COMPLTED	Hindsight: DST transfers should not have been initiated with MCS monitoring function only.	Many DST transfers were completed using the MCS monitoring function only.	Used MCS monitoring function only to satisfy the TSR Safety Function.	Hindsight: Initiation of DST transfers, using the MCS monitoring function only, should not have occurred.
SEPTEMBER 2008: ORP ASSESSMENT REPORT 08-ESD-011 ISSUED	Planned (future) subcontracted work, on SS equipment, should be at the correct quality assurance level.	Planned (future) subcontracted work, on SS equipment, was to be performed at a quality assurance level of "commercial quality" instead of "enhanced quality."	The planned subcontracted work was to be done at a quality assurance level lower than required.	The planned subcontracted work was for future upgrades to the TFLAN system. The Statement of Work (SOW) requisition was being reviewed at the time of this assessment. The work had not be initiated or performed.

EVENT	WHAT SHOULD HAVE HAPPENED	WHAT DID HAPPEN	DIFFERENCE	ANALYSIS
INITIATED 219-S TO SY-101 TRANSFER	Hindsight: 219-S transfer should not have been initiated with MCS monitoring function only.	219-S transfer was completed using the MCS monitoring function only.	Used MCS monitoring function only to satisfy the TSR Safety Function.	During the transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being GS instead of SS.

5.2 Overall Conclusions

The overall conclusions determined that the impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized or understood. Indications are that there were many discussions between QA and Engineering on applying a graded approach to the procurement of materials and CGI dedication process. However, a graded approach should not have been applied to the NQA-1 requirement for CGI dedication.

6.0 CAUSE STATEMENT

6.1 Root Cause

The Root Cause of this event was the impacts from introduction of the graded QA process into the CGI dedication process to address commercial grade items as safety components in SS applications were not adequately assessed, recognized, or understood.

The *QAPD* (TFC-PLN-02) captures the requirements of ASME NQA-1 which requires upgrade dedication for commercial grade items used in safety applications. TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance* describes the graded application of the QAPD requirements to items, services, and processes and states that for the procurement of items QAL ENHANCED, CGI upgrade dedication was not required. This graded approach was applied to the procurement process and to the CGI Upgrade Dedication process.

The Purpose/Scope of TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication,* Rev A, dated September 20, 2002, stated "This procedure establishes the dedication process, dedication requirements and related responsibilities for the use of commercial grade items in SC or SS applications for Hanford Tank Farm Contractor managed nuclear facilities." Based on the QA graded approach, the Purpose/Scope (Rev A-5, dated December 22, 2003) was changed to "This procedure ... for the use of commercial grade items **as safety components and having a Quality Assurance Level (QAL) designation of FULL,** in SC or SS applications ... facilities." Revision A-10, dated March 30, 2006, which was in effect during the TFLAN and HMI upgrade dedications, had the same Purpose/Scope as Rev A-5. The System Engineer reviewed TFC-ENG-DESIGN-C-15, Rev A-10 for applicability and found that the procedure only applied to QAL designation of FULL. Since the TFLAN and HMIs were QAL designated as ENHANCED, TFC-ENG-DESIGN-C-15 did not apply. Therefore, CGI Upgrade documentation was not required or completed. The System

Engineer exited the procedure and added the designated components to the safety equipment list.

TFC-ENG-DESIGN-C-15 was revised on April 24, 2008 to address component QAL designations of FULL and ENHANCED. Corrective actions to evaluate and revise the commercial grade item dedication process have been assigned to address this causal factor. In addition, a compensatory measure has been assigned to address the interim period until the evaluation and revisions have been completed.

6.2 Direct Cause

The Direct Cause of this event was the documentation required to upgrade the MCS monitoring function only components (HMI, TFLAN) to SS was not completed per the QAPD.

The documentation required for upgrade of the TFLAN and HMI components to safety significant was not prepared and issued (See RC-01) in accordance with the QAPD (i.e., NQA-1). On December 16, 2006 the 241-AY-102 to 241-AN-106 transfer was the first transfer to utilize the MCS monitoring function only components to satisfy the safety function of LCO 3.1.1. Since the components used to provide the leak detection function do not have qualification documentation to verify they are capable of providing that safety function, they cannot be considered OPERABLE under the TSR and the requirements of LCO 3.1.1 were not met. This was the initial TSR violation under criterion 5.4.1.b.2. Since then, many DST waste transfers have relied on these components to satisfy the safety function and therefore a legacy issue exists.

TFC-ENG-DESIGN-C-15 was revised on April 24, 2008 to address component QAL designations of FULL and ENHANCED. Corrective actions have been assigned to address the direct cause.

6.3 Contributing Causes

The following conditions were less than desirable, possibly aggravated the event, or assisted in allowing the event to occur but could not be demonstrated as being capable of preventing the event if the conditions were not present at the time of the event. The contributing causes are discussed below. In addition, the contributing causes were looked at from a Human Performance perspective and that discussion is in Attachment B.

CC-01 – When components are added to the SEL (RPP-8792), this does not indicate an evaluation of individual components to meet the SEL requirements has been completed.

RPP-8792, Section "Configuration Control" states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In

discussions with many different people (e.g., engineers, managers) there is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance).

Corrective actions assigned to RC-01 address this contributing cause. In addition, revision of the SEL process to comprehensively determine and document SSC safety function performance requirements (E-Stars #CH2M-PER-2008-1205.2) and evaluation of safety significant SSCs (E-Stars #CH2M-PER-2008-1205.3), as assigned by the Root Cause Analysis for CH2M-PER-2008-1205, support addressing this contributing cause.

CC-02 – The traceability of upgrade dedication documentation for installed components is less than adequate (LTA).

On November 18, 2008, the 219-S to SY-101 transfer was initiated. During the transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being general service instead of safety significant. This began a search for the upgrade dedication paperwork. On November 20, 2008, when the documentation could not be found, a TSR Violation was declared. However, on December 31, 2008 the upgrade dedication letters for 241-AY/AZ and 241-SY MCS (monitoring function only) were found in an engineering letter book. Component upgrade documentation must be easily traced back to the specific component and readily available.

In addition, upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, -AW, and -AP was probably never completed due to changes in personnel and engineering roles and responsibilities. During employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.

Corrective actions have been assigned to address this contributing cause.

6.4 Historical/Precursor Review:

A review of past events and documented problems involving the commercial grade item dedication process was performed to determine if previous events should have helped identify any latent organizational weaknesses.

Occurrence Reports for 2004, 2005, 2006, 2007 and 2008 were reviewed for similar events. Occurrence report EM-RP—WRPS-TANKFARM-2008-0002 was issued for this specific event and the causes are being addressed in this report. There were no additional occurrence reports on the CGI dedication process. Problem evaluation reports (PER) for 2004, 2005, 2006, 2007 and 2008 were

reviewed for similar events. There were 38 PERs (some were duplicates) reviewed based on the following key word searches: "CGI" [28 PERs], "commercial grade item" [14 PERs], "upgrade documentation" [0 PERs], "commercial grade item upgrade" [6 PERs], "commercial grade item dedication" [6 PERs] and "commercial grade dedication" [0 PERs]. Of the 38 PERs, 24 PERs were "not applicable" to the CGI dedication process. Of the remaining 14 PERs they can be grouped as follows: (1) – procurement issue, (2) – documentation issue, (4) – vendor/subcontractor issue, (9) – CGI dedication process issue. The following CGI dedication process issue PERs were further reviewed: CH2M-PER-2004-2492, CH2M-PER-2004-3015, CH2M-PER-2004-5985, CH2M-PER-2006-1869, WRPS-PER-2008-0040, WRPS-PER-2008-0309, WRPS-PER-2008-0421, WRPS-PER-2008-0435, and WRPS-PER-2008-0436. PER-2004-2492 states the CGI was incomplete and did not fully test two switches properly and PER-2006-1869 states the CGI was incomplete because valve cycle testing was not included. For PER-2006-1869, an extent of condition on valve seat leakage testing for safety significant valves was performed for Single-Shell and Double-Shell tank valves with no discrepancies noted. PER-2004-3015 and PER-2004-5985 were related to CGI records and traceability which is similar to CC-02. PER-2008-0421, 0435, and 0436 are recent examples of problems with the commercial grade item dedication process. In conclusion, over the past 5 years there have been several issues with the CGI dedication process but no indication of a prior organizational weakness that could have prevented this event.

6.5 Assessment Program

A review of all Independent, Specialty and Management Assessments since 2004 was performed to determine if past assessments had identified any latent weaknesses in the CGI dedication process. The following assessments were further reviewed: FY2005-CHEM-I-0006, *Engineering Work Processes (Design)*; FY2004-ENG-S-0061, *Conduct of Engineering*; SY2007-ENG-S-0301, *Engineering and Design SRID* and FY2008-ENG-S-0306, *VSS of Retrieval Closure and WFO Backflow Preventers & Isolation Valves for Double Valve Isolation.* Assessment S-0306 had one recommendation to incorporate DSA based critical characteristics for DVI into TFC-ENG-DESIGN-C-15. Since this was a recommendation, no action was assigned. None of the other assessments resulted in any findings or observations that related to the CGI dedication process.

7.0 EXTENT OF CONDITION

Any components, designated less than Quality Assurance Level FULL, that have been upgraded for Safety Significant application using TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication,* since December 5, 2003, should be reviewed/revised to ensure compliance. This would include the issues identified in WRPS-PER-2008-0421, WRPS-PER-2008-0435 and WRPS-PER-2008-0436. The corrective actions assigned to address RC-01 will also address the Extent of Condition.

8.0 GENERIC IMPLICATIONS

The generic implications of this event are the interfaces between the procurement process and CGI dedication process. Both processes rely on each other and if an issue is identified with one process, the other process should be reviewed for impacts. In this particular case, corrective actions address both the procurement and CGI dedication process.

9.0 SAFETY SIGNIFICANCE

Safety functions performed by safety-significant structures, systems and components (SSCs) prevent or mitigate releases of radiological materials to onsite workers and toxic chemicals to the offsite public and onsite workers. Safety significant SSCs also include those safety SSCs that protect the facility worker from serious injury (or fatality) because of hazards not controlled by institutional safety programs. Per LCO 3.1.1, the Tank Farm Local Area Network (TFLAN) and Human Machine Interfaces (HMI) are considered safety significant when used to monitor leak detection during double-shell tank waste transfers. The commercial grade item dedication process ensures that the safety functions of safety significant components are preserved (i.e., the commercial grade item is suitable for use in its intended application and that the item will perform its safety function). If the CGI dedication process is flawed, and the resulting qualification documentation is in questions, there is no assurance that the component will perform its safety function which initiates operator response to a waste leak. This could result in unacceptable (i.e., personnel or environmental) consequences.

10.0 CORRECTIVE ACTIONS

10.1 Immediate Actions Taken

- On November 20, 2008 at 1440 hrs – Red Arrow Entry: Transfers that rely on the W-314 MCS HMI are prohibited until safety significant upgrade documentation and associated corrective actions are completed (WRPS-PER-2008-0279). [SM Logbook]

10.2 Corrective Action Plan

CATPR-01-01	Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications. This action addresses RC-01.
Actionee:	E. A. Nelson
Due Date:	February 12, 2009
Deliverable:	Issue Management Directive (TFC-MD-xxx).

CATPR-01-02	Revise TFC-PLN-02, *Quality Assurance Program Description* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.
Actionee:	D. L. Shugars
Due Date:	June 2, 2009
Deliverable:	Revised TFC-PLN-02.

CATPR-01-03	Revise TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.
Actionee:	E. A. Nelson
Due Date:	June 2, 2009
Deliverable:	Revised TFC-ESHQ-Q_ADM-C-01.

CATPR-01-04	Revise TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.
Actionee:	E. A. Nelson
Due Date:	June 2, 2009
Deliverable:	Revised TFC-ENG-DESIGN-C-15.

CATPR-01-05	Revise TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.
Actionee:	J. M. Robinson
Due Date:	June 2, 2009
Deliverable:	Revised TFC-BSM-CP_CPR-C-06.

CATPR-01-06	Develop training material on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.
Actionee:	L. J. Keith
Due Date:	July 7, 2009
Deliverable:	Training material on revised CGI dedication process.

CATPR-01-07	Train Engineering and QA personnel on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.
Actionee:	L. J. Keith
Due Date:	September 30, 2009
Deliverable:	Completed training rosters with 90% completion of Engineering and QA personnel.

CATPR-01-08	Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in Letter, W. J. Johnson, WRPS, to S. J. Olinger, ORP, *Contract No. DE-AC27-08RV14800 – Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues,* WRPS-0900098, dated January 16, 2009. This action addresses RC-01.
Actionee:	D. M. Cato
Due Date:	Need September 30, 2009
Deliverable:	Letter documenting evaluation and/or revision, as required, of commercial grade item dedication records included in letter WRPS-0900098.

DC-01-01	Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action addresses DC-01.
Actionee:	M. A. Roberts
Due Date:	Completed December 17, 2008
Deliverable:	Issued CGI Dedication forms for the TFLAN and HMI components.

DC-01-02	Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. This action addresses DC-01.
Actionee:	M. A. Roberts
Due Date:	Completed January 7, 2009
Deliverable:	Issued Interoffice Memo, WRPS-0900045, "Commercial Grade Item Upgrade Dedication of Tank Farm Local Area Network and Human Machine Interface Components of the Tank Farm Monitoring and Control System for Double-Shell Tank Waste Transfers."

CC-02-01	Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component. This action addresses CC-02.
Actionee:	D. M. Cato
Due Date:	June 2, 2009
Deliverable:	Revised TFC-ENG-DESIGN-C-15 and TFC-ENG-FACSUP-C-23.

CC-02-02	Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments. This action addresses CC-02.
Actionee:	E. A. Nelson
Due Date:	June 16, 2009
Deliverable:	Guidance document.

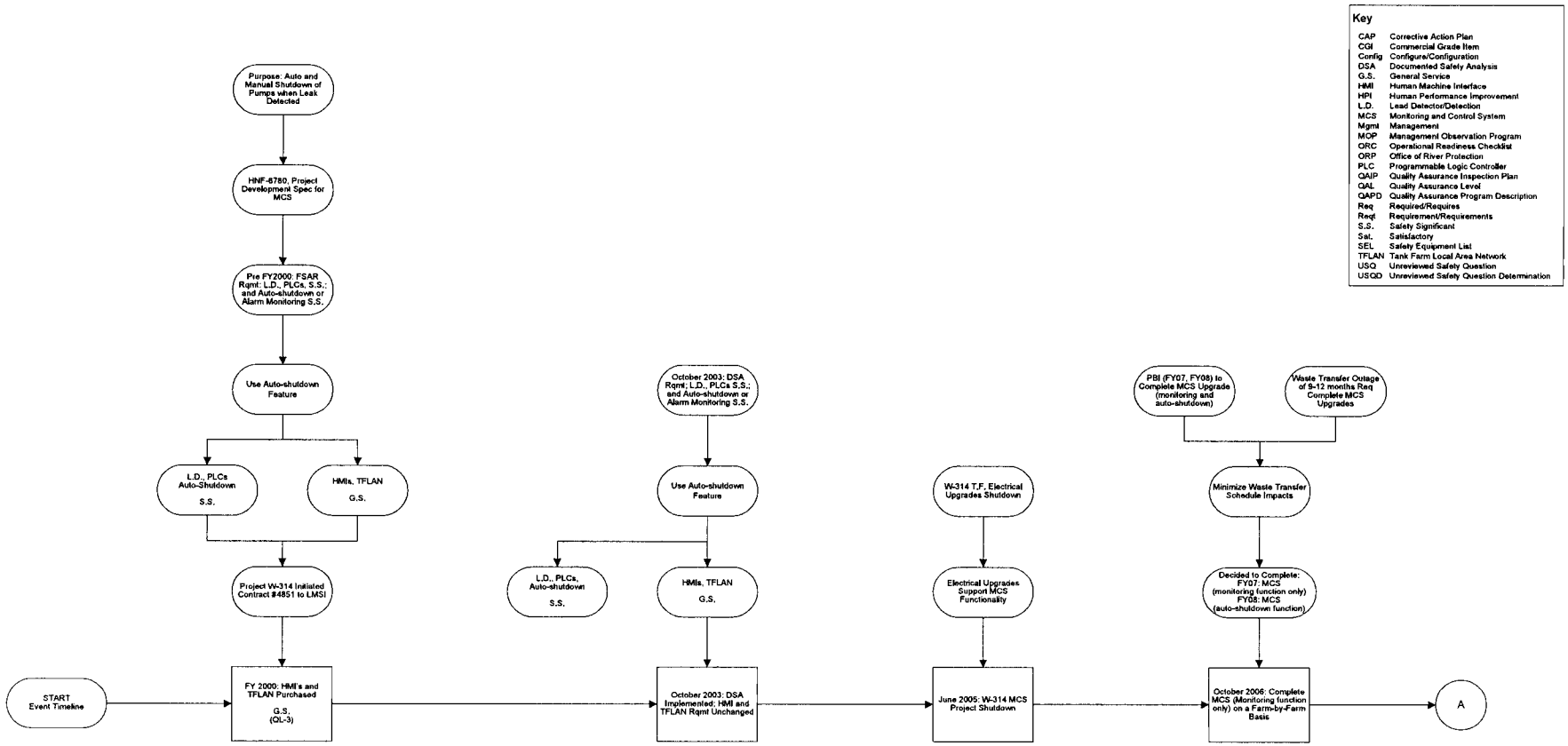
EPA-01	Perform an End Point effectiveness assessment to:
	• Verify completion of actions.
	• Following completion of actions:
	  o Review training material to ensure issues were captured.
	  o Interview for retention of training information, personnel (10 Engrs, 5 QA) who attended training.
	  o Review recently completed CGI documentation (minimum of 2 packages) for compliance to revised process.

Actionee:	M. A. Knight
Due Date:	December 30, 2009
Deliverable:	Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board.

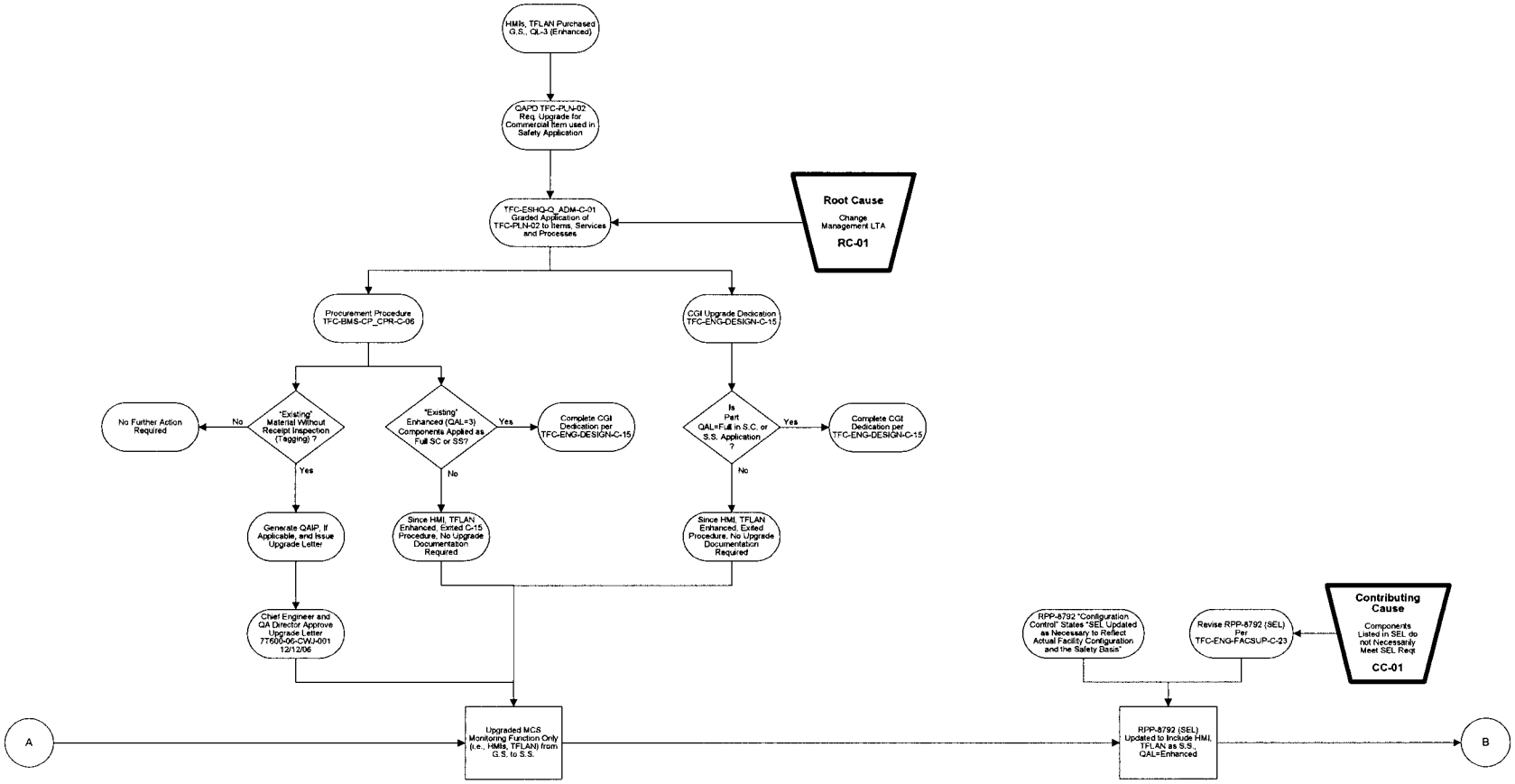
11.0 LESSONS LEARNED

The lessons learned from this event are that application of a graded approach may not be appropriate in all instances and that record copy documentation must be traceable to the specific component and easily accessible. In this particular event, a graded approach was applied to an NQA-1 requirement for CGI dedication. This is not a gradable process per NQA-1. It must be very clear and well understood when a graded approach can and cannot be applied. Proving that a component will meet critical characteristics and satisfy the required safety function is only as good as the documentation shows. If the documentation cannot be easily retrieved and traceable to a specific component, then the proof of compliance never existed.

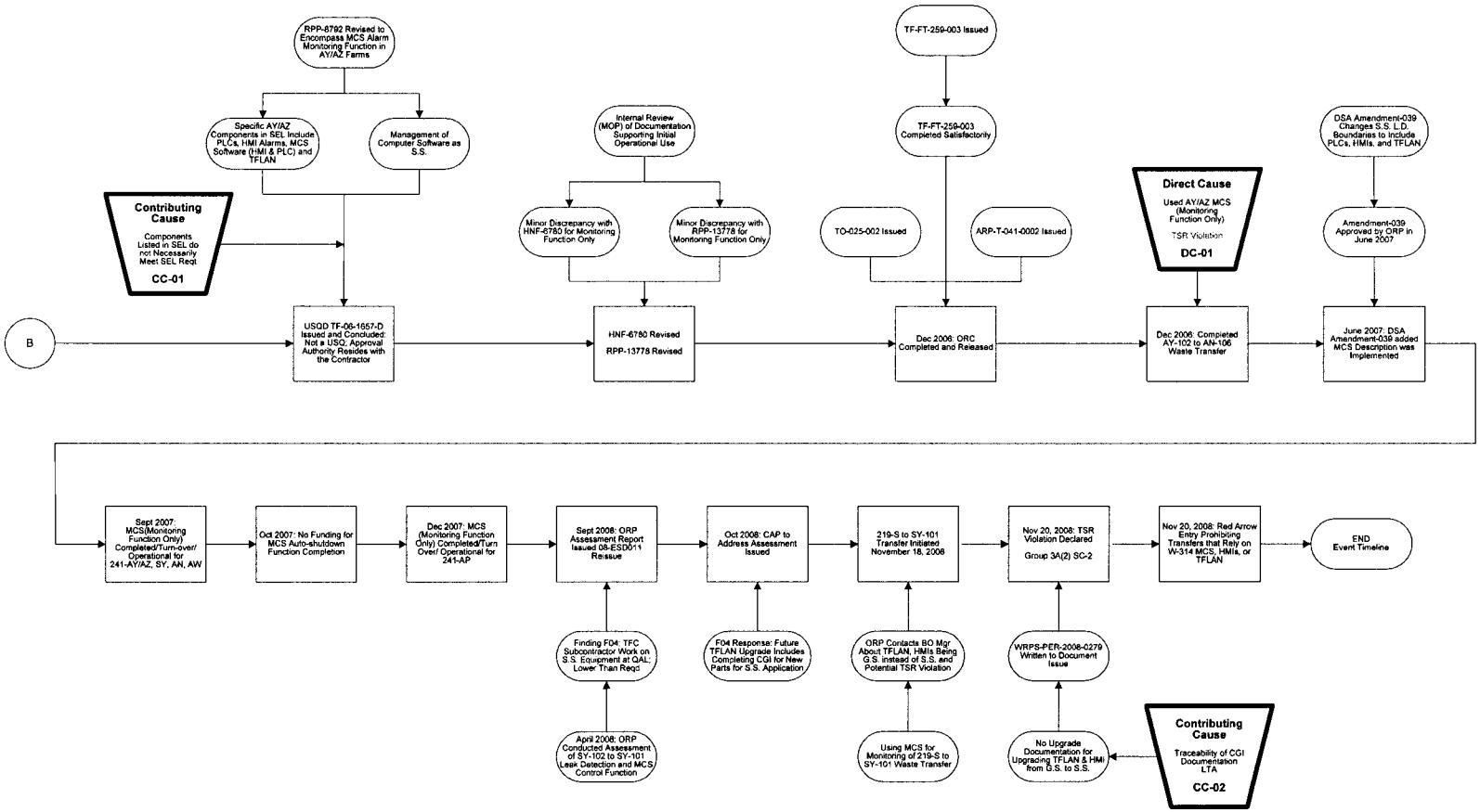
Event And Causal Factor Chart
Attachment A



Event And Causal Factor Chart
Attachment A



Event And Causal Factor Chart
Attachment A



Event and Causal Factor Chart Discussion
Attachment B

The preceding Event and Causal Factor Chart provides a high level sequence of the events and activities associated with the MCS (TFLAN, HMI) upgrade dedication documentation event. Above and below each Event is a listing of relevant conditions that were in place at the time of the event that influenced the event. Associated with these conditions were two conditions that were considered less than adequate (LTA) from the Human Performance perspective. Below are the LTA conditions with supporting rational.

LTA-1 – A3 – Human Performance LTA, B3 – Knowledge Base Error, C05 – Incorrect assumption that a correlation existed between two or more facts – On December 14, 2006, Unreviewed Safety Question (USQ) Determination, TF-06-1657-D, *Operation of the AY/AZ MCS (Monitoring Functions Only) and Release of Procedures TO-025-002, "Operate Monitor and Control System HMI in WTA Mode," Rev.A-0 (Draft) and ARP-T-041-00002, "Respond at Alarms at MCS HMI Stations," Rev. A-0 (Draft)* was issued. It states that the SEL has been revised to encompass alarm monitoring with the AY/AZ MCS as follows: (1) Specific AY/AZ MCS components addressed in the SEL include PLCs, HMIs, HMI alarms, MCS Computer Software (both HMI personal computer software and PLC software) and TFLAN and (2) Management of MCS Computer Software as safety significant is addressed. In discussions with the USQ Evaluator, he used the fact that (1) he was a member of the Joint Test Review Group which had reviewed the Project W-314 testing documentation and (2) that the AY/AZ MCS components had been added to RPP-8792, to determine that the components must already meet safety significant criteria. This condition is related to, and a symptom of, the weaknesses associated with RC-01. No further actions associated with this condition are recommended in this report.

LTA-2 – A3 – Human Performance LTA, B2 – Rule Based Error, C05 – Situation incorrectly identified or represented resulting in wrong rule used – RPP-8792, Section "Configuration Control" states the "SEL is updated as necessary to reflect actual facility configuration and the Safety Basis." In discussions with many different people (e.g., engineers, managers) there is a perception that in order for a component to be listed in the SEL, that component must meet the SEL-listed requirements. However, the SEL document owner states that the SEL is a "requirements" document (i.e., only lists the requirements and does not ensure component compliance). This condition is related to, and a symptom of, the weaknesses associated with RC-01. No further actions associated with this condition are recommended in this report.

LTA-3 – A5 – Communications LTA, B3 – Written Communication Not Used, C02 – Not available or inconvenient for use – During the 219-S to SY-101 transfer, ORP contacted the Base Operations Manager about a potential TSR violation due to the TFLAN and HMIs being general service instead of safety significant. This began a search for the upgrade dedication paperwork. When the documentation could not be found, a TSR Violation was declared. However, a month later the upgrade dedication letters were found in an engineering letter book. Component upgrade documentation must be easily traced back to the specific component and readily available. In addition, upgrade documentation for 241-AN, -AW, and -AP tank farms could not be located. Further discussions indicated that the upgrade documentation for 241-AN, -AW, and -AP was probably never completed due to changes in personnel and engineering roles and

responsibilities. During employee transitions, turnover of roles and responsibilities, current work assignments and open commitments is very important.

Attachment C
Causal Factor to Corrective Action Cross Walk

Cause	Corrective Action	Due Date	End Point Assessment	10 CFR Violation
RC-01	Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications. This action addresses RC-01.	February 12, 2009	Yes	N/A
RC-01	Revise TFC-PLN-02, *Quality Assurance Program Description* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.	June 2, 2009	Yes	N/A
RC-01	Revise TFC-ESHQ-Q_ADM-C-01, *Graded Quality Assurance* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.	June 2, 2009	Yes	N/A
RC-01	Revise TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01.	June 2, 2009	Yes	N/A
RC-01	Revise TFC-BSM-CP_CPR-C-06, *Procurement of Items (Materials)* to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier.	June 2, 2009	Yes	N/A
RC-01	Develop training material on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.	July 7, 2009	Yes	N/A
RC-01	Train Engineering and QA personnel on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02.	Sept 30, 2009	Yes	N/A

RC-01	Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in Letter, W. J. Johnson, WRPS, to S. J. Olinger, ORP, *Contract No. DE-AC27-08RV14800 – Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues,* WRPS-0900098, dated January 16, 2009. This action addresses RC-01.	Sept 30, 2009	Yes	N/A
DC-01	Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action addresses DC-01.	Completed (Dec 17, 2008)	Yes	N/A
DC-01	Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. This action addresses DC-01.	Completed (Jan 7, 2009)	Yes	N/A
CC-02	Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component. This action addresses CC-02.	June 2, 2009	Yes	N/A
CC-02	Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments.	June 16, 2009	Yes	N/A
EPA-01	Perform an End Point effectiveness assessment to: • Verify completion of actions. • Following completion of actions, review recently completed CGI documentation for compliance to revised process.	Dec 30, 2009	N/A	N/A

Task# WRPS-PER-2008-0279.1

E-STARS[R] Report
Task Detail Report
08/06/2009 1537

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.1		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-01 - Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial g		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 02/05/2009
Reference	WRPS-PER-2008-0279	**Due**	02/18/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CATPR-01-01 - Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications. This action addresses RC-01. Deliverable: Issue Management Directive (TFC-MD-xxx). RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Eric A - Assign - Completed with comments - 02/04/2009 1659 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 02/05/2009 0824 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf 8. WRPS-PER-2008-0279.1 CLOSURE E-MAIL.msg 9. WRPS-PER-2008-0279.1 CLOSURE MD & ADCA.pdf

COMMENTS

Poster	Nelson, Eric A (Littlejohn, Sue M) - 02/04/2009 1659
	Completed
	Attachment WRPS-PER-2008-0279.1 CLOSURE MD & ADCA.pdf are the closure documentaiton for this action. The Management Directive was issues on 2/4/09. Document: TFC-MD-062 Rev: A Title: Interim Direction with Revised Requirements for Procurement of Safety Significant SSCs

Task# WRPS-PER-2008-0279.1

	and Commercial Grade Item Dedication Summary of Change: New management directive to provide direction (beyond those previously provided in TFC-ENG-DESIGN-C-15, TFC-ESHQ-Q_ADM-C-01, and TFC-BSM-CP_CPR-C-06) for: • revising requirements for procurement of safety significant structures, systems, and components (SSCs) • revising criteria for determining when commercial grade item dedication is required • revising review and approval requirements for procurement of safety significant commercial grade items • setting additional requirements for commercial grade item dedication output documents These activities are being revised to ensure that the safety functions of safety significant SSCs are preserved (i.e., that the commercial grade item is suitable for use in its intended application, and that the item will perform its safety function). Effective Date: February 4, 2009
Poster	Knight, Mark A (Bragg, David A) - 02/05/2009 0824
Editor	Knight, Mark A (Bragg, David A) - 02/05/2009 0827
	Concur
	This action was completed with the 02/04/09 release of TFC-MD-062, "Interim Direction With Revised Requirements For Procurement of Safety Significant SSCs and Commercial Grade Item Dedication." The PER originator was contacted by e-mail on 02/05/09 with a status of the disposition. The management directive and the e-mail message to the PER originator are attached as objective evidence.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 02/05/2009 1058
	Steelman, Tracy L -- CLOSED
	Reviewed and closed. tls 2/5/09

TASK DUE DATE HISTORY

Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	02/18/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Message

From: Bragg, David A

Sent: Thursday, February 05, 2009 8:19 AM

To: Knight, Mark A

Cc: Roberts, Mark A

Subject: Closure of Corrective Action WRPS-PER-2008-0279.1 (SIG)

Mark,

WRPS-PER-2008-0279 identified a problem with the documentation required to upgrade the TFLAN and HMI components to Safety Significant not being prepared and issued.

Corrective action WRPS-PER-2008-0279.1 (SIG), due 02/12/09 has the following requirement:

CATPR-01-01 - Provide interim direction with revised requirements for procurement of safety significant SSCs and commercial grade item dedications. This action addresses RC-01. The deliverable is to issue a Management Directive (TFC-MD-xxx).

Eric Nelson completed this action with the 02/04/09 release of TFC-MD-062, "Interim Direction With Revised Requirements For Procurement of Safety Significant SSCs and Commercial Grade Item Dedication." An electronic copy of the management directive is attached to the task as objective evidence. The corrective action will now be submitted for closure.

Thanks,

David Bragg

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION

(See page 3 for form completion instructions)

1. Current Document Number/Revision	2. Document Title
TFC-MD-062/Rev A	Interim Direction w/Revised Requirements for Procur. of Safety Signif. SSCs and Commercial Grade Item Dedication

3. Document Type: ○ Procedure ○ Standard ○ Guidance Doc. ◉ Mgmt. Directive ○ Policy ○ Plan ○ Charter

4. Type of Change: ◉ New ○ Major Revision ○ Minor Revision ○ Administrative ○ Periodic Review ○ Cancellation

5. Initiated by	6. Phone	7. Mailstop	8. Date
G.L.Faust	373-0337	R2-58	1/22/09

9. Document Owner	10. Functional Area Manager
E.A.Nelson	H.S.Berman

11. Proposed Changes	12. Reason for Change
New Management Directive.	INTERIM DIRECTION WITH REVISED REQUIREMENTS FOR PROCUREMENT OF SAFETY SIGNIFICANT SSCs AND COMMERIAL GRADE ITEM DEDICATION

IMPACTED PROCEDURES / DOCUMENTS

13. Document all impacted procedures/documents, procedure/document owners, whether ADCA needs to be completed

Procedure Number	Procedure Title	Document Owner	ADCA (Yes/No)
N/A			

TRAINING

14. Implementation Period: _____ Start Date _____ End Date ☒ Not applicable

15. Effective Date 02/02/09

16. Affected Groups/Organizations (Check all that apply)

	Affected	Training Required	Verification Required		Affected	Training Required	Verification Required
All Employees	☐	☐	☐	PAAA	☐	☐	☐
All Managers	☐	☐	☐	Procedures	☐	☐	☐
Assessments	☐	☐	☐	Procurement	☒	☐	☐
Communications	☐	☐	☐	Project Delivery	☐	☐	☐
Contracts	☐	☐	☐	Property	☐	☐	☐
Emergency Management	☐	☐	☐	Quality Assurance	☒	☐	☐
Engineering	☒	☐	☐	Radiological Control	☐	☐	☐
Environmental	☐	☐	☐	Safety & Health	☐	☐	☐
Finance	☐	☐	☐	Strategic Planning	☐	☐	☐
Human Resources	☐	☐	☐	Training	☐	☐	☐
Information Resource Management	☐	☐	☐	Waste Management	☐	☐	☐
ISMS	☐	☐	☐	Work Planning	☐	☐	☐
Legal	☐	☐	☐	222-S Laboratory	☐	☐	☐
Maintenance	☐	☐	☐	Not Applicable	☐		
Operations	☐	☐	☐				

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION (continued)

1. Current Document Number/Revision	2. Document Title
TFC-MD-062/Rev A	Interim Direction w/Revised Requirements for Procur. of Safety Signif. SSCs and Commercial Grade Item Dedication

17a. Indicate Method of Training:

- [x] Required Reading with Verification
- [ ] Tailgate Meetings with Verification
- [ ] Staff Meetings with Verification
- [ ] Classroom Training with Verification
- [ ] Verbal Notification with Verification
- [ ] N/A

17b. Indicate Method of Informational Briefing:

- [ ] Face to Face Communication without Verification
- [ ] Verbal Notification without Verification
- [ ] Tailgate Meetings Without Verification
- [ ] Staff Meetings Without Verification
- [ ] Classroom Training without Verification
- [x] N/A

18. Additional Training Requirements (Provide justification if training will not be conducted): [ ] N/A

Required Reading with Verification for qualified Engineering Managers and Engineers, applicable QA staff and applicable Procurement staff.

REVIEW

19. Designated Reviewing Organizations:

[ ] Assessments	[ ] Legal	[ ] Radiological Control
[ ] Communications	[ ] Maintenance	[ ] Safety and Health
[ ] Contracts	[ ] Operations	[ ] Strategic Planning
[ ] Emergency Management	[ ] PAAA	[ ] Training
[x] Engineering	[ ] Procedures	[ ] Waste Management
[ ] Environmental	[x] Procurement	[ ] Work Planning
[ ] Finance	[ ] Project Delivery	[ ] 222-S Laboratory
[ ] Human Resources	[ ] Property	[ ] Other _____
[ ] Information Resource Management	[x] Quality Assurance	[ ] Not Applicable
[x] ISMS		

APPROVALS

20.

_____
S/RID Representative (print and sign)/Date

21. USQ

- (●) USQ
  _____
  USQ Evaluator (print and sign) & USQ Number/Date
- ( ) USQ-CAT-EX
  _____
  USQ Evaluator or Individual Designated by NS&L (print and sign) & USQ Number/Date
- ( ) Out of Scope
  _____
  Print Name and Sign/Date

22.

_____
Document Owner (print and sign)/Date

_____
Functional Area Manager (print and sign)/Date

_____
Procedures (print and sign)/Date

FOR ADMINISTRATIVE CHANGES ONLY:

_____
Procedures Manager (print and sign)/Date

ADMINISTRATIVE DOCUMENT CHANGE AUTHORIZATION INSTRUCTIONS

1) Current Document Number/Revision: The current document number and revision or the new document number and revision provided by the Procedures group.

2) Document Title: The title of the procedure being revised or the title of the new procedure. (Does the title convey the intent of the procedure, not to the owner, but to the user?)

3) Document Type: Indicate document type by marking the appropriate box. (See TFC-PLN-80 for definitions.)

4) Type of Change: New procedure, a major, minor or administrative change (see TFC-BSM-AD-C-01, 5.0 Definitions) to the existing procedure, periodic review, or cancellation?

5) Initiated by: Name of the person initiating the change.

6) Initiator's Phone Number: Enter either a cell phone number or office phone number where the initiator can be reached.

7) Mail Stop: The mail stop of the initiator.

8) Date: The date of submittal for the change. (This is not the implementation date or effective date of the change.)

9) Document Owner: The person assigned by the Functional Area Manager (TFC-BSM-AD-C-01, Section 3.2). See procedure ownership matrix on the procedures web page.

10) Functional Area Manager: The person responsible for implementation of the procedure (TFC-BSM-AD-C-01, Section 3.1.) See procedure ownership matrix on the procedures web page.

11) Proposed Changes: Clearly state changes to be made.

12) Reason for the Change: Explain why the change is necessary (e.g., the process has to be modified due to a new requirement, change in organizational responsibility, etc.

13) Impacted Procedures/Documents: Ask yourself: Does the new procedure or major or minor change affect any other organizations? Does it affect any other procedures (processes) or documents in other organizations? Call the POCs for the other organizations and have them help you make sure. (The POC list hotlink is available in TFC-BSM-AD-D-01.) Perform a search for all references to the procedure being changed and list those impacted by the change. This is the document owner's responsibility to identify other impacted procedures and to fill out the additional ADCAs!

14) Implementation Period: Not applicable for minor changes only. The implementation period is the time needed to complete the training on the changes and "VERIFICATION OF THE TRAINING COMPLETED" prior to the "Effective Date" of the procedure. If no implementation period is required, check "Not applicable."

15) Effective Date: The effective date of the procedure. Both the current procedure and the new procedure are shown on the intranet "Procedure page" until the effective date of the new procedure. The effective date of the procedure should not precede completion of the required training, orientation, briefing and/or socialization necessary to fully inform all affected organizations and personnel.

16) Affected Groups/Organization: Using the block 13 information, indicate the affected groups/organizations. The minimum choices should include the organization that owns the procedure, the organizations with responsibilities in the procedure and organizations/ groups/employees impacted by the change. If no one is affected, check "Not applicable."

17A, 17B) Method of Training/Briefing: Identify the method of training that will be given to affected groups/organizations/individuals. (Major revisions to a process should require (mandate) a more stringent training method that may include documented demonstration of proficiency and/or knowledge of both the process and the changes.) (See TFC-BSM-AD-C-01, Section 4.2, step 6 and Section 4.3, step 2, that discuss the document owner's responsibility to identify the training method and implementation.) Required reading is initiated by the document owner in accordance with TFC-OPS-OPER-C-33. If no training or informal briefing method is required, check "N/A."

18) Additional Training Requirements: Intended to be used to capture training that may be non-standard, unique, hands-on, etc. It is also for the document owner to provide the reason why training is not required in support of a change. (Even a minor change can set up a situation where personnel errors can occur.) If there are no additional training requirements, check "N/A."

19) Designated Reviewing Organizations: List organizations that should review the proposed change. See TFC-BSM-AD-C-01. Identify minimum reviewers. If no reviews are necessary, check "N/A."

20) S/RID Representative/Date: Signature by S/RID IA/SME indicates completion of review. If the S/RID signature is not required (not required for minor changes and guidance documents and typically not required for plans, policies, charters, and management directives), write N/A in the block.

21) USQ: USQ evaluator checks the "USQ" block and signs and dates and enters the USQ number when a USQ screening is performed. If the change is classified as "inconsequential" as defined by TFC-ENG-SB-C-03, the USQ evaluator or individual designated by NS&L checks the "USQ-CAT-EX" block, signs and dates, and enters the USQ number. If the document is listed in RPP-27195, no USQ is required; check the "Out of Scope" block and print, sign, and date.

22) Document Owner/Date: By signing, the document owner has reviewed and agrees with the ADCA and that the decisions/choices made address the change and the training necessary.

Functional Area Manager/Date: By signing this block, the Functional Area Manager is giving approval for the new or changed procedure. (See TFC-BSM-AD-C-01, Section 3.1, for responsibilities of the functional area manager.)

Procedures/Date: Final signature by Procedures prior to issuance of procedure.

Procedures Manager/Date: Final signature by Procedures Manager prior to issuance of procedure for administrative changes only.

Ownership matrix

1.0 PURPOSE AND SCOPE
(7.1.1)

This management directive provides direction (revised beyond requirements in TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication", TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance" and TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)" for: 1) Revising the requirements for procurement of safety significant SSCs, 2) revising the criteria for determining when commercial grade item dedication is required, 3) revising the review and approval requirements for procurement of safety significant commercial grade items, and 4) setting additional requirements for commercial grade item dedication output documents. These activities are being revised to ensure that the safety functions of safety significant SSCs are preserved (i.e. that the commercial grade item is suitable for use in its intended application, and that the item will perform its safety function).

A summary of the revised requirement changes are as follows:

- All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.
- Initial review and approval of CGIs by the applicable Lead Discipline Engineer as the Design Authority approval is required.
- An additional QA final review and approval of CGIs, and final review and approval of the CGIs by the responsible manager as Design Authority approval, is required.
- Attachment A of TFC-ENG-DESIGN-C-15 was revised to require the completion of Sections 1-8 for all CGIs.
- Added requirements to address the CGI/QAIP interface for verification of critical characteristics.
- Added an independent review and approval of all procurements of safety significant SSCs by QA and Engineering Central DA & Standards.

2.0 IMPLEMENTATION

This management directive is effective for all WRPS procurements initiated after 01/18/09. This management directive will remain in effect until the applicable procedures are revised to incorporate these revised requirements.

3.0 APPLICABILITY

This directive applies to all work performed by or at the direction of Washington River Protection Solutions (WRPS).

4.0 FORMAL IMPLEMENTATION

Items listed in **bold** provide emphasis of revised requirements.

4.1 Revised Requirements for Procurement of Safety Significant SSCs

1. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.**

2. **Revise TFC-BSM-CP CPR-C-06 as follows:**

   a. Section 4.1, Item 4, NOTE:

WRPS Quality Assurance Level	**TFMSS Quality Level**	**Safety Code ***
Commercial	QL-0	**General Service**
Enhanced	QL-3	**General Service**
Full	QL-1 or QL-2 **	General Service Safety Significant Safety Class

* Safety Code is equal to that assigned to the system that the component is to be installed into.

** Items designated Full Quality can be procured either as QL-1 or QL-2 – the end results are identical – either the supplier is an evaluated supplier or the item goes through a commercial grade item dedication process. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.**

4.2 Revised Requirements for Commercial Grade Item Dedication

1. Revise TFC-ENG-DESIGN-C-15 as follows:

a. *Section 1.0 "PURPOSE AND SCOPE"*

This procedure establishes the dedication process, dedication requirements, and related responsibilities for the use of **safety significant SSCs with a QAL designation of *Full Quality, Enhanced Quality and Commercial Quality not procured from an evaluated supplier (see Section 5.0, "Definitions") for Hanford Tank Operations Contractor (TOC) managed nuclear facilities.*** *These activities are performed to ensure that the safety functions of safety significant SSCs are preserved (i.e., the item is suitable for use in its intended application and that the item will perform its safety function) and to protect the design baseline from being inadvertently changed. The purpose of this procedure is not to define procurement steps. Refer to TFC-ENG-DESIGN-C-34 for procurement guidance.*

This procedure applies to all TOC organizations (facilities or projects) that determine technical and quality requirements for existing or new items in safety significant applications.

b. *Section 4.1-* ***Add the following:***

8. A Commercial Grade Item Upgrade Dedication form (A-6002-544) shall be prepared and approved prior to procurement of all safety significant SSCs with a QAL designation of Full Quality, Enhanced Quality and Commercial Quality not procured from an evaluated supplier.

c. *Section 4.10 Obtain Initial Reviews and Approval to Proceed with Verification*

NOTE: Signatures below denote that the signer has reviewed all relative and pertinent information for their areas of responsibility, including assurance that the information provided is both complete and accurate.

Responsible Engineer	1. Review dedication form.
	2. Sign appropriate blank in Section 8 of A-6002-544.
Design Organization	3. If a design organization staff member prepared A-6002-544, ensure that it is additionally reviewed and signed in Section 8 **by the Design Agent**.
Quality Assurance Engineer	4. Review the upgrade dedication form and sign Section 8 of A-6002-544.
Lead Discipline	5. **Review the upgrade dedication form and sign Section 8 of**

Engineer **A-6002-544 as the Design Authority.**

d. Section 4.12 Obtain Final Reviews and Approval

Responsible Engineer — 1. Review the completed dedication form and sign Section 8 of A-6002-544.

Design Organization — 2. If a design organization **completes** A-6002-544, ensure that it is additionally reviewed and signed in Section 8 **by the Design Agent**.

Quality Assurance Engineer — **3. Review the upgrade dedication package and sign Section 8 of A-6002-544.**

Responsible Manager — **4. Review the completed dedication form and sign Section 8 of A-6002-544 as the Design Authority**

Responsible Engineer — 5. Submit completed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.

e. Section 5.0 DEFINITIONS

Dedication, NOTE:

NOTE: Per this procedure, the dedication process applies to safety significant SSCs with a QAL designation of ***Full Quality, Enhanced Quality or Commercial Quality not procured from an evaluated supplier.***

f. Section 7.1 Requirements

2. ASME *NQA-1-**2004**, "Quality Assurance Program Requirements for Nuclear Facilities."*

g. Figure 1 – ***Delete "Is QAL Full or Enhanced?" block.***

h. Attachment A -

*1) Revise the title "system engineer" to "**responsible engineer**" throughout.*

2) Section 3-Type of Replacement

After the SSC has been classified as safety significant an evaluation is performed to determine if any form, fit, function, manufacturing processes, or materials of construction have changed between the installed and the replacement item(s), unless it is a new application for a modification or project.

3) *Section 4- Part/Component Safety Classification*

4.1 *Part/Component Safety Classification, 1st paragraph:* ***The item's classification is listed as safety significant. (Delete the remainder of this 1st paragraph.)***

4) *Section 8- Verification of Critical Characteristics, Item 8.8:*

8.8 *Indicate the verifying Organization (e.g., Quality Assurance, procurement support, offsite laboratory, etc.).*

NOTE: For those critical characteristics verified by receipt inspection, the *responsible engineer or QA shall note the Verifying Organization as "AVS" or "WRPS QC", sign the critical characteristics as being verified, and attach a copy of the completed* ***Quality Assurance Inspection Plan (QAIP), and associated documents (e.g. test reports, certificates of calibration, material test reports, certificates of conformance, etc.)****.*

i. Attachment B-

1) Section 2.0, SCOPE - Delete "....and having an assigned QAL of FULL ...."

2) Section 6.0, PART PROCUREMENT/MATERIAL CONTROL NOTES, Item 1- Delete "....with a QAL designation of FULL...."

2. Revise TFC-ESHQ-Q_ADM-C-01 as follows:

a. Table 1- Revise as follows:

Quality Assurance Criteria	Full Quality Imposed/ High Project Risk	Enhanced Quality Imposed/Medium Project Risk	Enhanced Quality Imposed/Low Project Risk	Commercial Quality Imposed
Program	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD
Procurement	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. Approved supplier from Evaluated Supplier List if not procured as **dedicated** commercial grade item. Development of Subcontractor Oversight Plans	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. **Quality Assurance review and approval of procurement documents for SS SSCs.** **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**

b. Table 2- Add the following NOTE:

"NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier."

c. *Table 3- Revise as follows:*

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***YES***	***NO***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***NO***	***YES***

NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***YES***	***NO***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***NO***	***Note 1***
General Service *Enhanced Quality*	*QL 3*	*YES*	*AVS or WRPS QC*	*YES*	*NO*	***Note 1***
General Service *Commercial Quality*	*QL 0*	*YES*	*MC*	*NO*	*NO*	***NO***

AVS – Mission Support Contractor Acquisition Verification Services
MC - **WRPS** Material Control

Note 1 - The responsible engineer and quality engineer will determine the method of procurement, acceptance criteria, and acceptance methods.

d. *Table 4 - Add the following NOTE:*

"NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier."

3. **Revise TFC-BSM-CP_CPR-C-06 as follows:**

   a. Section 4.1, Item 12.b: Ensure the appropriate Quality attributes have been applied for the items/materials being procured, in accordance with RPP-RPT-29160 **and the applicable Commercial Grade Item Upgrade Dedication form (A-6002-544)** (for Safety Significant SSCs) and/or TFC-ESHQ-Q_ADM-C-01 as applicable.

   b. Section 4.1, Item 20.a: **Delete**

   c. Section 4.1, Item 20, NOTE: **Delete**

   d. Section 4.5, **Commercial Grade items:**

Responsible Engineer

1. **For Safety Significant SSCs with a QAL designation of Full Quality, Enhanced Quality or Commercial Quality not procured from an evaluated supplier**, it shall be demonstrated as suitable for use in its intended application. In accordance with TFC-PLN-03, this requires a documented engineering evaluation to establish and verify critical characteristics before the item is relied on for operation. Critical design characteristics and appropriateness of the item for use shall be verified (e.g., inspection, testing). Refer to TFC-ENG-DESIGN-C-15 for the commercial grade item dedication process.

2. If "existing" commercial grade items **(i.e. Any item with a QAL designation of Full Quality, Enhanced Quality and Commercial Quality not procured from an evaluated supplier** will be installed **as Safety Significant SSCs** upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. Generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance manager.

c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

d. Complete the upgrade via the commercial grade item upgrade dedication process. Refer to TFC-ENG-DESIGN-C-15 for requirements to upgrade materials.

NOTE: This is not intended to allow procurement of material as commercial items to bypass the normal procurement process but is intended to allow prudent use of existing material through an evaluation process to support use in higher quality level applications.

e. ATTACHMENT B - Add the following:

	Determination Statement	Yes	No	Approval Required	Document Approval On
15	All items classified as Safety Significant in the Safety Equipment List (Ref. RPP-8792) are to be approved by Engineering Design Authority & Standards and Quality Assurance.			Engineering Design Authority & Standards Quality Assurance	TFMSS electronic BOM/MR

5.0 DEFINITIONS

No terms or phrases unique to this management directive are used.

6.0 RECORDS

No records are generated in the performance of this management directive.

7.0 SOURCES

7.1 Requirements

1. ASME NQA-1-2004, "Quality Assurance Program Requirements for Nuclear Facilities."

7.2 References

1. TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)."
2. TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication."
3. TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance."
4. TFC-PLN-02, "Quality Assurance Program Description."

Task# WRPS-PER-2008-0279.2

E-STARS[R] Report
Task Detail Report
08/06/2009 1539

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.2		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-02: Revise TFC-PLN-02, Quality Assurance Program Description to e		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	10/07/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CATPR-01-02: Revise TFC-PLN-02, Quality Assurance Program Description to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01. Deliverable: Revised TFC-PLN-02. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Shugars, David L - Assign - Delegated - 01/29/2009 0902 *Instructions:* ↳ *Routing List:* Route List - Active *Instructions:* • McElroy, Michael L - Assign - Awaiting Response	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 10/04/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 06/02/2009 1330
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

Task# WRPS-PER-2008-0279.2

Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/02/2009 1335		
	Approved due date extension to 9/30/09. tls 6/2/09		
	Extension Justification: TFC-MD-063, "Procurement of Full, Enhanced, or Commercial Quality Items Designated Safety Significant Not Procured from an Evaluated Supplier" was generated on March 16, 2009, to define the requirements and processes for commercial item dedication. The changes/revision to TFC-PLN-02, QAPD, have been made but have not been approved by the DOE. Negotiations with the DOE are ongoing for the entire QAPD. The extension was approved by F. Beranek, ESRB Sponsor, on 6/2/09. tls 6/2/09		
TASK DUE DATE HISTORY			
Modified	06/02/2009 1331 - ^PER Coordinator	**New Due Date**	09/30/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	06/08/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0279.3

E-STARS[R] Report
Task Detail Report
08/06/2009 1539

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.3		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-03: Revise TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance to ensure that commercial grade item dedication is required		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 06/02/2009
Reference	WRPS-PER-2008-0279	**Due**	06/08/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CATPR-01-03: Revise TFC-ESHQ-Q_ADM-C-01, Graded Quality Assurance to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01. Deliverable: Revised TFC-ESHQ-Q_ADM-C-01. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Eric A - Assign - Completed with comments - 06/01/2009 1429 *Instructions:* ↳ *Routing List:* Route List - Inactive *Instructions:* • Faust, Gary L - Assign - Completed with comments - 06/01/2009 1427	
	• Knight, Mark A - Review - Concur with comments - 06/01/2009 1733 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. TFC-ESHQ-Q_ADM-C-01 Rev B,_Graded_Quality_Assurance.doc 8. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

Poster	Faust, Gary L - 06/01/2009 1427
	Completed
	TFC-ESHQ-Q_ADN-C-01, Rev B (attached) has been revised to incorporate the changes in TFC-MD-62 to ensure that commercial grade item dedication is required for Safety Significant SSCs not procured fron an evalauated NQA-1 supplier.

Task# WRPS-PER-2008-0279.3			
Poster	Nelson, Eric A - 06/01/2009 1429		
	Completed		
	Procedure has been revised as required.		
Poster	Knight, Mark A (Bragg, David A) - 06/01/2009 1733		
	Concur		
	The required action was completed by the release of TFC-ESHQ-Q_ADM-C-01, Rev B on 06/01/09. This revision includes changes to pages 8, 10, 12, 13, 14, and 18 designating the requirement to use the commercial grade dedication process if an item is not procured through an evaluated supplier. A copy of this document is attached as objective evidence. The PER originator has reviewed these changes and concurs with the disposition.		
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/02/2009 0849		
	Steelman, Tracy L -- CLOSED		
	The PAAA Coordinator reviewed and approve for closure. tls 6/2/09		
TASK DUE DATE HISTORY			
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	06/08/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1)

This procedure describes the graded application of TFC-PLN-02 requirements to Washington River Protection Solutions LLC (WRPS) items, services, and processes. It applies to items, services, and processes regardless of safety classification, and is to be used in conjunction with TFC-BSM-AD-C-01 for the development of processes that implement the requirements of TFC-PLN-02 or with procurement processes when items or services are being obtained from suppliers.

For development of company level procedures that implement TFC-PLN-02 requirements, this procedure will be used primarily by process owners (functional area managers) to apply the described grading process in the appropriate procedure(s) and document(s) based on the degree of project risk (high, medium, low), the importance to nuclear safety, and the quality levels applied.

The graded application of the Quality Assurance Program Description (QAPD) depends on the importance to safety and the risk associated with the item, service, or process under consideration. The grading process shall not be used to circumvent applicable quality assurance, legal, or contractual requirements. Rather, grading determines the extent to which controls within the quality assurance criteria are applied. The graded approach is implemented at a programmatic level during the development of procedures and not necessarily during day to day operations. The issuance and use of an approved procedures indicates the application of the graded approach.

Since there are significant variations among items, services, and processes, as well as differences in project scopes of work and responsibilities, this procedure does not attempt to provide a precise definition of how each section of the QAPD is applied in a graded manner. Rather, in conjunction with TFC-ENG-SB-C-06, it documents the process for grading the selection of control actions and provides some possible grading illustrations in the attached Tables.

The graded approach may not be used in implementing the unreviewed safety question (USQ) process or in implementing technical safety requirements.

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

See Figure 1 for process flowchart.

4.1 Developing Procedures to Implement QAPD Requirements in a Graded Approach

Functional Area Manager

1. Develop a procedure or process to implement TFC-PLN-02 requirements in accordance with TFC-BSM-AD-C-01, using the guidance provided in Tables 1 and 2 of this procedure, taking into consideration the risk associated with the activity, the importance to safety, and the quality assurance needs as outlined in Sections 4.2 and 4.3.

2. Submit procedure or process for review in accordance with TFC-BSM-AD-C-01, ensuring that Quality Assurance is on distribution for review.

Quality Assurance

3. Review the implementing procedure or process to ensure that the requirements of TFC-PLN-02 are not being negated but rather are being implemented on a graded approach commensurate with the importance to safety and risk associated with the process.

4.2 Risk Determination

Functional Area Manager

1. Determine the probability and consequence of failure, considering both safety and project risk. Assessment of risk shall consider, as applicable: (7.1.1)

   - Nuclear safety classification or hazard category of the item or activity
   - Relative importance to safety, safeguards, and security
   - Magnitude of any hazard or risk involved
   - Adequacy of existing safety documentation
   - Impact/consequence of failure on programmatic mission of a facility
   - Particular characteristics of a facility or activity
   - Programmatic mission of a facility
   - Life cycle stage of a facility
   - Complexity of items, services, or processes involved
   - History of problems at a facility, or with an item, service, or process
   - Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.)

- Application of required codes, standards, laws, regulations, or imposed requirements.

2. Based on the assessment of the risk, establish controls, documentation, and actions for implementation of the services and/or processes (see Tables 1 and 2 of this procedure for examples of graded controls). These controls shall be commensurate with the safety classification designation of the associated structures, systems, and components (SSCs), taking into account the impact the item, service, or process could have on the functionality of the SSCs.

   NOTE: Those items, services, and processes having no engineered safety function in accordance with TFC-ENG-SB-C-06 may still require controls beyond commercial quality assurance.

4.3 Quality Assurance Level Determination
(7.1.1)

Responsible Engineer/Process Owner

1. The responsible engineer (project engineer or system/component engineer), with assistance from the Quality Assurance engineer, as appropriate, shall determine and specify the appropriate quality assurance controls for the item, service, or process. Control variables may include, but are not limited to:

   - Number and specificity of procedures, instructions, drawings, specifications, or work control documents that define the processes or work methods involved
   - Extent of preparatory analysis and planning for the work
   - Frequency and scope of assessments, verifications, reviews, inspections, and other oversight activities
   - Extent of documentation generated as a result of work completion that is reviewed to verify that work has been accomplished in accordance with the applicable requirements
   - Degree of review and level of approval of procedures, plans, and other documentation
   - Extent of training and qualification/certification of personnel
   - Degree of control over procurement activities
   - The extent of in-process controls for design, fabrication, installation, testing, and operation
   - The procurement quality level designated in the Safety Equipment List for items associated with safety class or safety significant SSCs.

NOTE: Refer to Tables 1 through 4 for examples and further discussion of how the graded application of quality assurance controls could be applied.

5.0 DEFINITIONS
(7.1.1)

Commercial quality assurance. Level of controls for those items, services, or processes where, based on an evaluation of risk or nuclear safety, no additional quality controls beyond the providers published or stated attributes of the item, service, or process is required.

Enhanced quality assurance. Level of controls for those items, services, or processes where, based on an evaluation of risk or nuclear safety, additional controls beyond the providers published or stated attributes of the item, service, or process are needed to verify critical attributes.

Full quality assurance. Level of controls applied for items, services, or processes that are commensurate with the controls invoked under ASME NQA-1 or other appropriate national consensus standard.

Graded approach. A process by which the level of analysis, verification/validation, documentation, and actions are determined based on safety, quality and/or project risk. This approach shall determine the appropriate level of effort necessary to attain and document the technical/quality requirements.

6.0 RECORDS

No records are generated in the performance of this procedure.

7.0 SOURCES

7.1 Requirements

1. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. TFC-BSM-AD-C-01, "Administrative Document Development and Maintenance."
2. TFC-ENG-SB-C-06, "Safety Basis Development."

Figure 1. Graded Quality Assurance Flowchart.

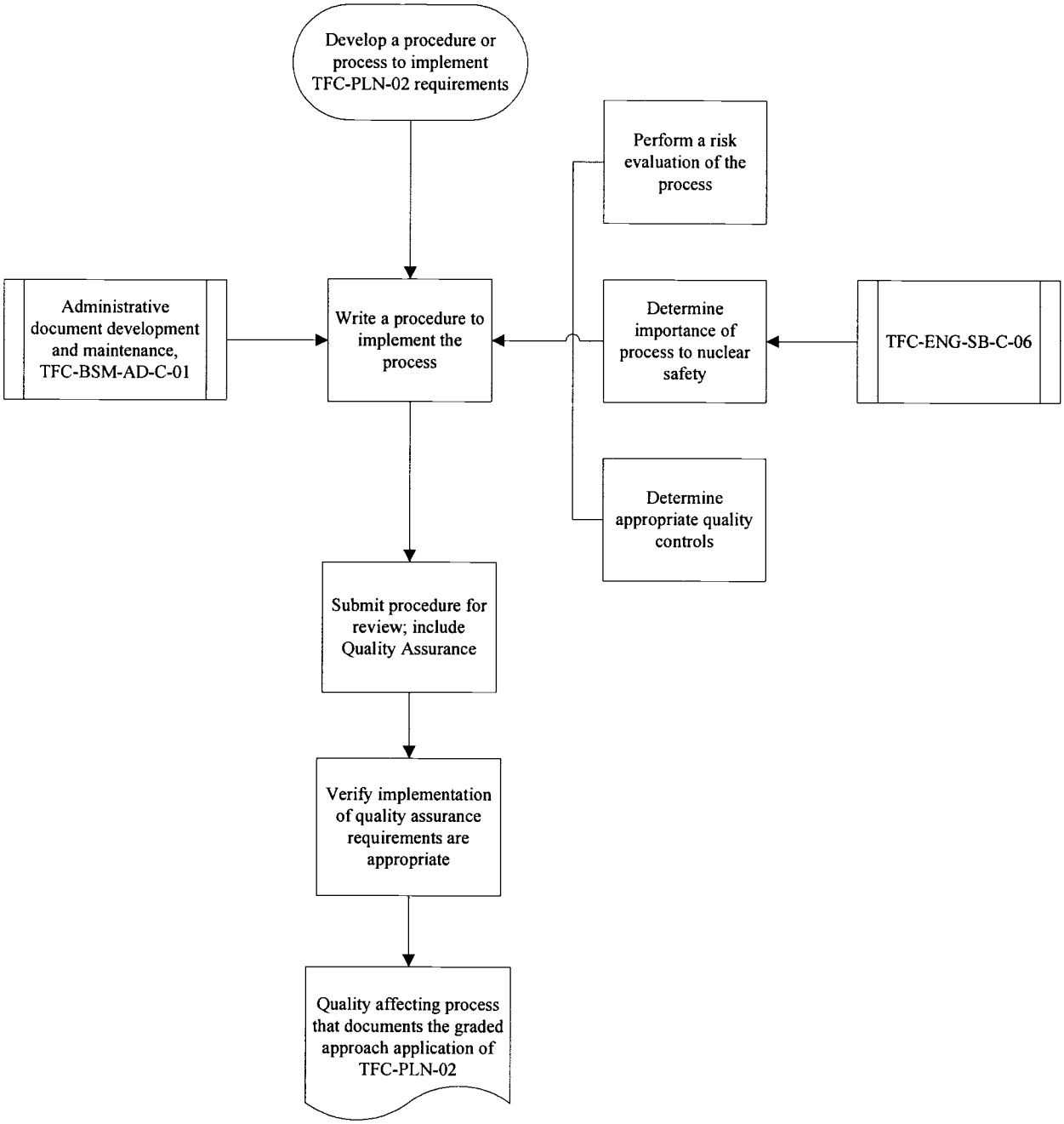


Table 1. Examples of Graded Application of Quality Assurance Controls Applied to Processes.

This table provides examples of grading that process owners might take into consideration when establishing controls for their work processes based on risk and/or quality assurance level designations. This table is for illustration purposes only and can be referenced for use by process owners to develop their own required graded controls in accordance with this procedure.

Quality Assurance Criteria	Full Quality Imposed/ High Project Risk	Enhance Quality Imposed/Medium Project Risk	Enhanced Quality Imposed/Low Project Risk	Commercial Quality Imposed
Program	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD
Personnel Training and Qualification	Routine training requirements (e.g., HGET). Qualification and certification in accordance with applicable standards. Extensive pre-job training. Dry run of critical services or processes.	Routine training requirements (e.g., HGET). Qualification and certification in accordance with applicable standards. Extensive pre-job training.	Routine training requirements (e.g., HGET). Qualification and certification in accordance with applicable standards.	Routine training requirements (e.g., HGET).
Quality Improvement	Problem Evaluation Request (PER) process, including nonconformance reports, occurrence reports, and corrective action implementation.	Problem Evaluation Request (PER) process, including nonconformance reports, occurrence reports, and corrective action implementation.	Problem Evaluation Request (PER) process, including nonconformance reports, occurrence reports, and corrective action implementation.	Problem Evaluation Request (PER) process, including nonconformance reports, occurrence reports, and corrective action implementation.
Documents and Records	Quality records.	Quality records.	Quality records.	No quality records unless specified by procedure.
Work Processes	Extensive pre-job planning. High level of detail in procedures based on the complexity of the task and the associated risk.	Pre-job planning, with focus on most critical services or processes. Procedures provide general direction unless the process is performed infrequently.	Pre-job planning, with focus on most critical services or processes. Procedures provide general direction unless the process is performed infrequently.	Routine planning. Standard work practices or manufacturer's instructions.

Table 1. Examples of Graded Application of Quality Assurance Controls Applied to Processes. (cont.)

Quality Assurance Criteria	Full Quality Imposed/ High Project Risk	Enhance Quality Imposed/Medium Project Risk	Enhanced Quality Imposed/Low Project Risk	Commercial Quality Imposed
Program	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD
	M&TE calibrated by a supplier on the Evaluated Supplier List. Hold and witness points. Pre-job walk-through and critiques.	M&TE calibrated by a supplier on the Evaluated Supplier List. Hold and witness points.	M&TE calibrated by a supplier on the Evaluated Supplier List.	
Design* *Refer to TFC-PLN-03, "Engineering Program Management Plan."	Independent design review.* Inspection/test requirements and methods in design documents. Team review. Use of mock-ups. Engineering walkdowns.	Independent design review.* Inspection/test requirements and methods in design documents. Team review.	Design review by design organization. Inspection/test requirements and methods in design documents.	Design review by design organization.
Procurement	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents.	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved NQA-1 supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved NQA-1 supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. **Quality Assurance review and approval of procurement documents for SS SSCs.** **Approved NQA-1 supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**

Table 1. Examples of Graded Application of Quality Assurance Controls Applied to Processes. (cont.)

Quality Assurance Criteria	Full Quality Imposed/ High Project Risk	Enhance Quality Imposed/Medium Project Risk	Enhanced Quality Imposed/Low Project Risk	Commercial Quality Imposed
Program	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD
	Approved supplier from Evaluated Supplier List if not procured as commercial grade item. Development of Subcontractor Oversight Plans			
Inspection and Acceptance Testing	Inspection/test performed by technically qualified personnel. Inspection/test requirements defined in design and procurement documents. Quality Assurance Inspection Plan. Source inspection.	Inspection/test performed by technically qualified personnel. Inspection/test requirements defined in design and procurement documents. Quality Assurance Inspection Plan. Source inspection.	Inspection/test performed by technically qualified personnel. Inspection/test requirements defined in design and procurement documents. Quality Assurance Inspection Plan.	Inspection and acceptance by procurer, warehouse personnel, or material controller per applicable procedure. Inspect for suspect/ counterfeit items.
	Quality control receiving inspection. Final inspection. Inspection/test results documented. Inspect for suspect/ counterfeit items.	Quality control receiving inspection. Final inspection. Inspection/test results documented. Inspect for suspect/ counterfeit items.	Quality control receiving inspection. Final inspection. Inspection/test results documented. Inspect for suspect/ counterfeit items.	Need not be inspected by certified inspection personnel.
Management Assessment	High focus.	Medium focus.	Medium focus.	Low focus.
Independent Assessment	Assessment performed by independent person or group. Scheduled.	Assessment performed by independent person or group. Scheduled.	Assessment performed by independent person or group. Scheduled.	Spot checks performed during surveillances conducted by Projects group.

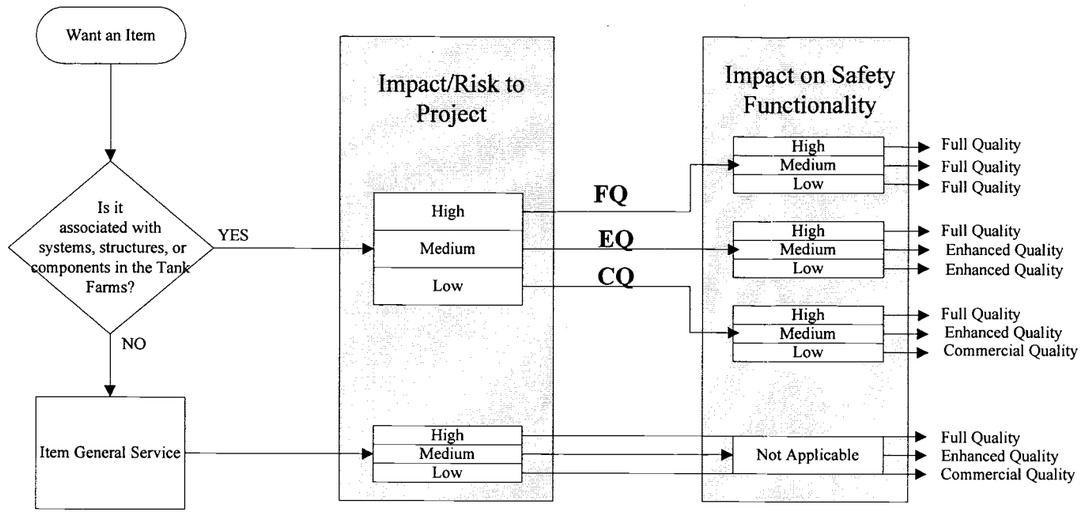
Table 2. PassPort Conversion from WRPS Quality Assurance Levels.

There are three basic types of quality assurance levels that will determine the rigor applied to the implementation of items and services associated with tank farm systems. These quality levels are full, enhanced, and commercial. For purposes of procurements utilizing PassPort (the Project Hanford Management Contractor (PHMC) procurement system), these quality assurance levels correspond to the PassPort quality levels (QL) outlined below.

WRPS Quality Assurance Level	PHMC PassPort QL Designation
Full	QL-1 or QL-2
Enhanced	QL-3
Commercial	QL-0

NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated NQA-1 supplier.

Table 3. Illustration of the Graded Approach Application for Procurement of Items.



Notes:
1. As of implementation of DSA, there are no Safety Class systems in the Tank Farms.
2. Quality Level will be based on most conservative impact based on risk or safety functionality.
3. This is for illustration purposes only - any conflict with referenced procedures, procedure requirements are to be followed.
4. Project Risk would include evaluation against implementation of external drivers such as OCRWM, WIPP, AG-1, WAC etc. in addition to business risks such as failure to meet milestones.

Primary Implementing Processes:

Quality Assurance Program Description
TFC-PLN-02

Graded Quality Assurance
TFC-ESHQ-Q_ADM-C-01

Procurement of Items (Materials)
TFC-BSM-CP_CPR-C-06

Commercial Grade Item Upgrade Dedication
TFC-ENG-DESIGN-C-15

Table 3. Illustration of the Graded Approach Application for Procurement of Items. (cont.)

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***YES***	***NO***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***NO***	***YES***

NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated NQA-1 supplier.

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***YES***	***NO***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***NO***	***Note 1***
General Service *Enhanced Quality*	*QL 3*	*YES*	*AVS or WRPS QC*	*YES*	*NO*	***Note 1***
General Service *Commercial Quality*	*QL 0*	*YES*	*MC*	*NO*	*NO*	***NO***

AVS – Mission Support Contractor Acquisition Verification Services
MC - **WRPS** Material Control

NOTE 1: The responsible engineer and quality engineer will determine the method of procurement, acceptance criteria, and acceptance methods.

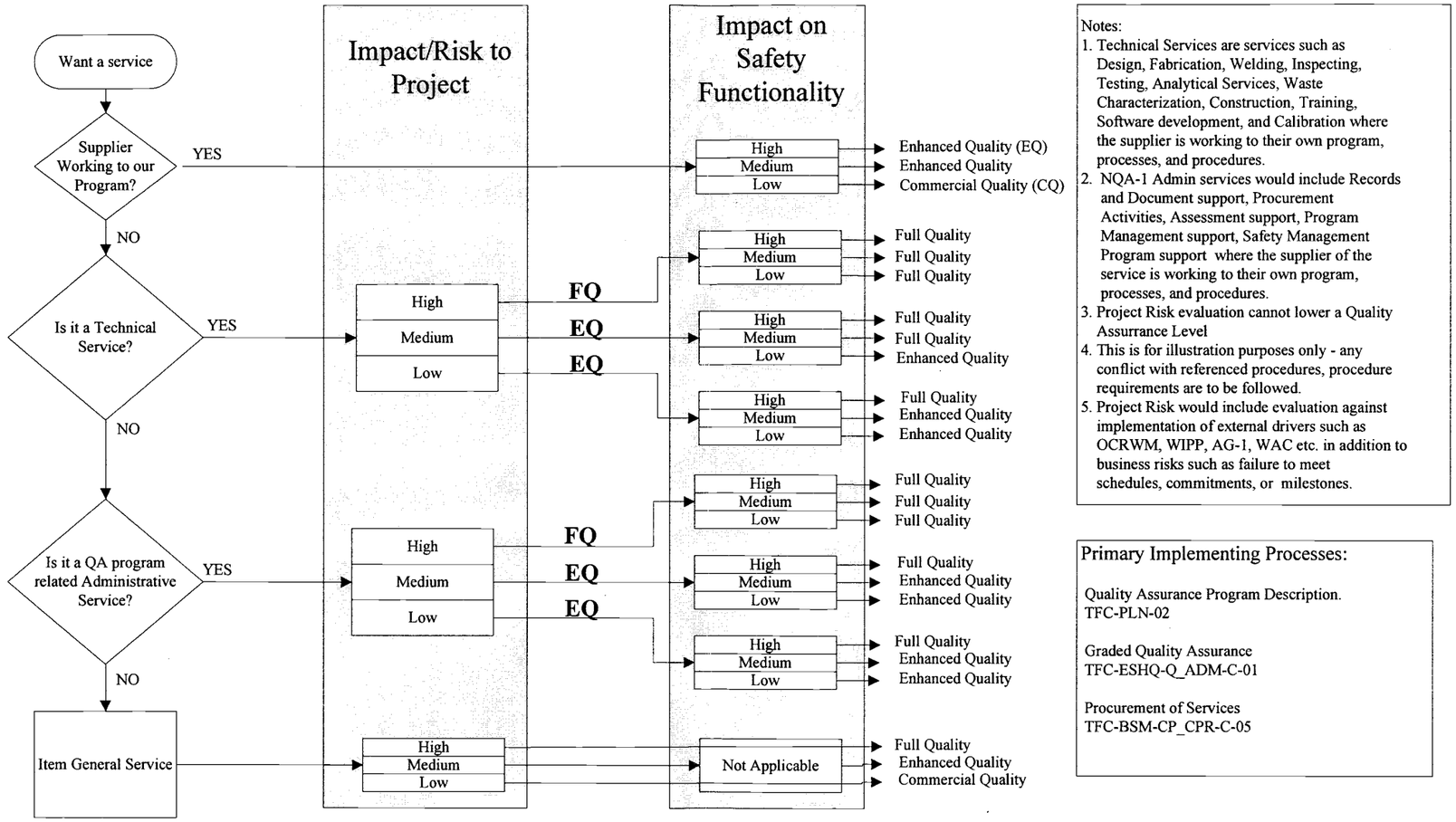
Table 3. Illustration of the Graded Approach Application for Procurement of Items. (cont.)

Want an Item	Impact/Risk to Project	Impact on Safety Functionality	Designated Quality Level
Is item associated with a Structure, System, or Components in the Tank Farms? This question identifies whether or not the item being procured is going to be utilized in a system within the boundaries of the tank farms that could be part of a system that provides mitigation of hazards that are addressed in the DSA. All other items are by definition general service items.	***HIGH*** – Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Failure of the item would have a detrimental effect on meeting mission goals and stakeholder expectations.	***HIGH*** – The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 2 or 3, assigning it a Quality Level of *FULL QUALITY*	***FULL QUALITY*** – Based on Impact on Project Risk and Functionality, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process.
		MEDIUM - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 0 or 1, assigning it a Quality Level of *ENHANCED QUALITY*	***FULL QUALITY*** – Based on Project Risk, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process. (see note on CGI)
		LOW - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of <0, assigning it a Quality Level of *COMMERCIAL QUALITY*	***FULL QUALITY*** – Based on Project Risk, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process. (see note on CGI)
	MEDIUM – Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.). - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Also utilized when there is an application of required codes, standards, laws, regulations, or other imposed requirements. - Failure of the item would have, or has the potential to have, major impacts on meeting mission goals and stakeholder expectations.	***HIGH*** – The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 2 or 3, assigning it a Quality Level of *FULL QUALITY*	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process. (see note on CGI)
		MEDIUM - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 0 or 1, assigning it a Quality Level of *ENHANCED QUALITY*	***ENHANCED QUALITY*** – Based on Impact on Functionality and on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
		LOW - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of <0, assigning it a Quality Level of *COMMERCIAL QUALITY*	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc.
	LOW - Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) Basically, the part can fail and only introduce minor impacts to the project or system.	***HIGH*** – The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 2 or 3, assigning it a Quality Level of *FULL QUALITY*	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process. (see note on CGI)
		MEDIUM - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of 0 or 1, assigning it a Quality Level of *ENHANCED QUALITY*	***ENHANCED QUALITY*** – Based on Impact on Functionality, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..

Table 3. Illustration of the Graded Approach Application for Procurement of Items. (cont.)

Want an Item	Impact/Risk to Project	Impact on Safety Functionality	Designated Quality Level
		LOW - The contribution to functionality evaluation resulted in a Quality Adjustment Factor of <0, assigning it a Quality Level of *COMMERCIAL QUALITY*	***COMMERCIAL QUALITY*** – No additional attributes beyond the reported suppliers claims contained in supplier literature are requested. We are buying the item based on the suppliers catalog and identification.
Item is General Service The item is not part of a Structure, System, or component to be used as part of the tank farm systems.	***HIGH*** – Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Failure of the item would have a detrimental effect on meeting mission goals and stakeholder expectations.	*Not Applicable* - Structures, Systems, and Components not associated with operations of the Tank Farms are not credited for mitigating postulated accidents identified in the Documented Safety Analysis.	***FULL QUALITY*** – Based on Project Risk, the Supplier is either an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent) or the item is procured as ***ENHANCED QUALITY*** utilizing the Commercial Grade Item Upgrade Dedication process. (see note on CGI)
	MEDIUM – Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Also utilized when there is an application of required codes, standards, laws, regulations, or other imposed requirements. - Failure of the item would have, or has the potential to have, major impacts on meeting mission goals and stakeholder expectations.	*Not Applicable* - Structures, Systems, and Components not associated with operations of the Tank Farms are not credited for mitigating postulated accidents identified in the Documented Safety Analysis.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
	LOW - Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) Basically, the part can fail and only introduce minor impacts to the project or system.	*Not Applicable* - Structures, Systems, and Components not associated with operations of the Tank Farms are not credited for mitigating postulated accidents identified in the Documented Safety Analysis.	***COMMERCIAL QUALITY*** – No additional attributes beyond the reported suppliers claims contained in supplier literature are requested. We are buying the item based on the suppliers catalog and identification.

Table 4. Illustration of the Graded Approach Application for Procurement of Services.



Notes:
1. Technical Services are services such as Design, Fabrication, Welding, Inspecting, Testing, Analytical Services, Waste Characterization, Construction, Training, Software development, and Calibration where the supplier is working to their own program, processes, and procedures.
2. NQA-1 Admin services would include Records and Document support, Procurement Activities, Assessment support, Program Management support, Safety Management Program support where the supplier of the service is working to their own program, processes, and procedures.
3. Project Risk evaluation cannot lower a Quality Assurance Level
4. This is for illustration purposes only - any conflict with referenced procedures, procedure requirements are to be followed.
5. Project Risk would include evaluation against implementation of external drivers such as OCRWM, WIPP, AG-1, WAC etc. in addition to business risks such as failure to meet schedules, commitments, or milestones.

Primary Implementing Processes:

Quality Assurance Program Description.
TFC-PLN-02

Graded Quality Assurance
TFC-ESHQ-Q_ADM-C-01

Procurement of Services
TFC-BSM-CP_CPR-C-05

	Passport Quality Level (QL)	Receipt Insp. (Fabrications)	QAIP req'd (Fabrications)	ESL
Full Quality	QL 1/2	AVS	Yes	Yes
Enhanced Quality	QL 3	AVS	Yes	No
Commercial Quality	QL 0	MC	No	No

AVS - Acquisition Verification Services
MC - WRPS Material Control

Table 4. Illustration of the Graded Approach Application for Procurement of Services. (cont.)

Want a Service	Impact/Risk to Project	Impact on Safety Functionality	Designated Quality Level
Supplier working to our program? This question identifies if the service provider will be working to our processes – primarily staff augments	***NOT APPLICABLE*** - Evaluation of risk is not considered here based on the following: 1. Degree of risk mitigation is already addressed in the program, processes, and procedures being utilized to perform the function, or 2. The pedigree of the performer provides the risk mitigating methodology	***HIGH*** – The deliverable is highly contingent on the pedigree of the individual performing the activity where no internal Peer review is available– External certifications or qualifications	***ENHANCED QUALITY*** – Based on Impact on Functionality, Specific attributes associated with the candidate's qualifications and/or certifications that are important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified.
	NOT APPLICABLE - Evaluation of risk is not considered here based on the following: 1. Degree of risk mitigation is already addressed in the program, processes, and procedures being utilized to perform the function, or 2. The pedigree of the performer provides the risk mitigating methodology	***MEDIUM*** – The deliverable is contingent on the pedigree of the performer but viable internal peer review processes are utilized.	***ENHANCED QUALITY*** – Based on Impact on Functionality, Specific attributes associated with the candidate's qualifications and/or certifications that are important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified.
	NOT APPLICABLE - Evaluation of risk is not considered here based on the following: 1. Degree of risk mitigation is already addressed in the program, processes, and procedures being utilized to perform the function, or 2. The pedigree of the performer provides the risk mitigating methodology	***LOW*** – The deliverable is contingent upon our internal processes and the pedigree of the performer is not critical.	***COMMERCIAL QUALITY*** – No attributes associated with the candidate's qualification and/or training warrants independent verification to ensure the quality of the deliverable service. Any specific training or qualification requirements to perform assigned tasks will be addressed post award.
Is the service considered a "Technical" service? Is the requested service one of the following activities where the provider is performing the activity using the providers program, processes or procedures? - Engineering Design - Fabrication - Welding - Non Destructive Examinations - Equipment Testing - Analytical Services - Waste Characterization - Construction - Training - Software Development - Calibration - Hoisting & Rigging - Other services that are governed by industry standards and/or are highly reliant on special work processes and qualifications.	***HIGH*** – Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. Failure to deliver a defendable product would have a significant detrimental effect on meeting mission goals and stakeholder expectations. Service is being heavily relied upon to implement external drivers such as OCRWM, WIPP, AG-1, WAC	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Project Risk and Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Project Risk, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Project Risk, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
	MEDIUM – Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Also utilized when there is an application of required codes, standards, laws, regulations, or other imposed requirements. - Failure to deliver a defendable product would have, or has the potential to have, major impacts on meeting mission goals and stakeholder expectations. Service has external drivers associated such as OCRWM, WIPP, AG-1, WAC, etc.	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Medium Project Risk and Medium Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc.

Table 4. Illustration of the Graded Approach Application for Procurement of Services. (cont.)

Want a Service	Impact/Risk to Project	Impact on Safety Functionality	Designated Quality Level
	LOW - Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) Basically, the deliverable could be discarded and only introduce minor impacts to the project or system.	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Impact on Functionality, specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
Is the service considered an "Administrative Service" related to our QA program? Is the requested service one of the following activities where the provider is performing the activity using the providers program, processes or procedures? - Engineering Support - Records and Documents - Procurement Activities - Assessment Support - Program Management - Safety Management Program support - Other services where the performance of the service is addressed in the 10 elements of DOE Order 414 or the 18 elements of the NQA-1.	***HIGH*** – Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. Failure to deliver a defendable product would have a significant detrimental effect on meeting mission goals and stakeholder expectations. Service is being heavily relied upon to implement external drivers such as OCRWM, WIPP, AG-1, WAC	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Impact on Functionality and Project Risk, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Project Risk, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Project Risk, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
	MEDIUM – Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also consider Impact/consequence of failure on programmatic mission of a facility, Particular characteristics of a facility or activity, Life cycle stage of a facility, Complexity of items, services, or processes involved, History of problems at a facility, or with an item, service, or process. - Also utilized when there is an application of required codes, standards, laws, regulations, or other imposed requirements. - Failure to deliver a defendable product would have, or has the potential to have, major impacts on meeting mission goals and stakeholder expectations.	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Medium Impact on Functionality and Medium Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc.
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..

Table 4. Illustration of the Graded Approach Application for Procurement of Services. (cont.)

Want a Service	Impact/Risk to Project	Impact on Safety Functionality	Designated Quality Level
	LOW - Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) Basically, the deliverable could be discarded and only introduce minor impacts to the project or system.	***HIGH*** – The pedigree of the deliverable is contingent on having a national consensus standard based quality program and the deliverable will be utilized as the primary product to provide the pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***FULL QUALITY*** – Based on Impact on Functionality, the Supplier needs to be an evaluated supplier for all of the identified attributes of NQA-1 (or equivalent).
		MEDIUM - The pedigree of the deliverable is contingent on having a national consensus standard based quality program, however, the deliverable will not be utilized as the primary product providing pedigree behind systems or programs that are credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Impact on Functionality, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
		LOW – The pedigree of the deliverable would be enhanced by having a national consensus standard based quality product, however the deliverable is not critical towards providing pedigree of any systems or programs credited for mitigating hazards associated with safety significant systems or programs in the DSA.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where deemed necessary, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
Item is General Service The service has minor or no impact on systems or programs that are credited for implementing QA program or Safety Management programs identified in the DSA	***HIGH*** – Project risk – determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Failure of the deliverable would have a detrimental effect on meeting mission goals and stakeholder expectations.	*Not Applicable* - By definition, the service has little or no impact on QA program implementation or Safety Management Program implementation.	***FULL QUALITY*** – Based on Project Risk, the Supplier's program needs to be evaluated for the appropriately identified attributes.
	MEDIUM – Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) - Also utilized when there is an application of required codes, standards, laws, regulations, or other imposed requirements. - Failure of the deliverable would have, or has the potential to have, negative impacts on meeting mission goals and stakeholder expectations.	*Not Applicable* - By definition, the service has little or no impact on QA program implementation or Safety Management Program implementation.	***ENHANCED QUALITY*** – Based on Project Risk, Specific attributes important to ensuring the quality of the deliverable are identified and, where practical, are designated to be independently verified by Source Inspections, Receipt Inspections, Factory Testing, Construction Testing, Acceptance Testing, Document Reviews, Surveillances, etc..
	LOW - Project Risk - determined by the project based on cost, schedule, and other considerations (e.g., financial risk, security risk, legal ramifications or project delay, etc.) Basically, the deliverable can fail and only introduce minor impacts to the project or system.	*Not Applicable* - By definition, the service has little or no impact on QA program implementation or Safety Management Program implementation.	***COMMERCIAL QUALITY*** – No additional attributes beyond the reported suppliers claims contained in supplier literature are requested. We are buying the item based on the suppliers catalog and identification.

NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.

Task# WRPS-PER-2008-0279.4

E-STARS[R] Report
Task Detail Report
08/06/2009 1540

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.4		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-04 - Revise TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Ded		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 07/27/2009
Reference	WRPS-PER-2008-0279	**Due**	07/26/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	CATPR-01-04 - Revise TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01. Deliverable: Revised TFC-ENG-DESIGN-C-15. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Eric A - Assign - Completed with comments - 07/21/2009 0843 *Instructions:* ↳ *Routing List:* Route List - Inactive *Instructions:* • Faust, Gary L - Assign - Completed with comments - 07/17/2009 1101	
	• Knight, Mark A - Review - Concur with comments - 07/21/2009 0852 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf 8. WRPS-PER-2008-0279.4 SIG PER CLOSURE.pdf

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 05/26/2009 1322
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

Task# WRPS-PER-2008-0279.4	
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 05/26/2009 1326
	Approved due date extension to 7/19/09. tls 5/26/09
	Extension Justification: In letter WRPS-0900549 to ORP, WRPS identified the actions that WRPS is taking to ensure that implementation of the commercial grade dedication program meets the requirements of WRPS procedures and NQA-1. One of the actions was to "Procure the services of a nationally recognized CGD expert (Dan Maret of Sequoia Consulting Group, Inc. who assisted the Waste Treatment Plant in correcting comparable CGD issues) to review our program, provide recommendations for program and procedure improvements and provide on-site training." The CGD expert has been contracted, and the on-site training was completed 5/21/09. The recommendations for program and procedure improvements are due 6/12/09. The required revision to TFC-ENG-DESIGN-C-15 is on hold pending receipt of the noted recommendations. Compensatory Measures: TFC-MD-62,INTERIM DIRECTION WITH REVISED REQUIREMENTS FOR PROCUREMENT OF SAFETY SIGNIFICANT SSCs AND COMMERCIAL GRADE ITEM DEDICATION, has been extended to 7/19/09 in order to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. The extension was approved by F. Beranek, ESRB Sponsor, on 5/26/09. tls 5/26/09
Poster	Nelson, Eric A - 07/06/2009 1249
	Approved due date extension to 7/19/09. tls 5/26/09
	Revised draft procedure (TFC-ENG-DESIGN-C-15) was sent out for review 7/6/09
Poster	Nelson, Eric A - 07/06/2009 1251
	The revised draft procedure was sent out for review 7/6/09
Poster	Faust, Gary L (Littlejohn, Sue M) - 07/17/2009 1101
	Completed
	TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, has been revised (Rev B attached) to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an NQA-1 evaluated supplier. This action addresses RC-01. This completes the required action, and this task can be closed.
Poster	Nelson, Eric A (Littlejohn, Sue M) - 07/21/2009 0843
	Completed
	TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication, has been revised (Rev B attached) to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an NQA-1 evaluated supplier. This action addresses RC-01. This completes the required action, and this task can be closed.
Poster	Knight, Mark A (Owen, Annette) - 07/21/2009 0852
	Concur
	Action complete as TFC-ENG-DESIGN-C-15 has been revised and released.
Poster	^PER CAs (Owen, Annette) - 07/21/2009 0941
	CLOSED
	Closure statement and attached documentation are adequate to close this action.
Poster	^PER CAs (Owen, Annette) - 07/21/2009 1231
	Task Re-Open
	This was closed in error.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 07/27/2009 0824
	Steelman, Tracy L -- CLOSED

Task# WRPS-PER-2008-0279.4

	Reviewed and closed. tls 7-27-09		
TASK DUE DATE HISTORY			
Modified	05/26/2009 1323 - ^PER Coordinator	**New Due Date**	07/19/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	06/08/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Ownership matrix

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Figure 1. Commercial Grade Item Dedication Process Flowchart. 9

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1.0 PURPOSE AND SCOPE
(7.1.1, 7.1.2)

This procedure establishes the dedication process, dedication requirements, and related responsibilities for the use of commercial grade items (see Section 5.0, "Definitions") as safety significant components in safety significant applications for Hanford Tank Operations Contractor (TOC) managed nuclear facilities. These activities are performed to ensure that the safety functions of safety significant items are preserved (i.e., the commercial grade item is suitable for use in its intended application and that the item will perform its safety function). This procedure does not define procurement steps. Refer to TFC-ENG-DESIGN-C-34 and TFC-BSM-CP_CPR-C-06 for procurement guidance.

This procedure applies to all TOC organizations (facilities or projects) that determine technical and quality requirements for new items in safety significant applications. Existing items intended for use in a safety significant application that have not been procured from an NQA-1 evaluated supplier (i.e., evaluated for the specific components or services) shall be documented as nonconforming in accordance with TFC-ESHQ-Q_ADM-C-02.

2.0 IMPLEMENTATION

Implementation of this procedure revision is effective on August 24, 2009, to allow sufficient time for training on the revised procedure requirements.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

Figure 1 provides the flowchart for the commercial grade item dedication process.

4.1 General Conventions and Requirements

1. The following terms are synonymous and are used to describe the process, process steps, and process documentation associated with this procedure:

   - Commercial grade item (CGI) dedication (CGID)
   - CGI dedication
   - Item dedication
   - Dedication.

2. Responsible engineering staff shall ensure that CGI dedication documentation required to be prepared by contractors/subcontractors is identified as a deliverable in appropriate contracting documents, is available when needed to support TOC activities, and is subsequently dispositioned and retained as quality record documentation (see Section 4.6 and 4.8) per Section 4.12, step 3, of this procedure.

3. A Commercial Grade Item Dedication form (A-6002-544) shall be prepared and initially approved prior to procurement (see Section 4.6) of all safety significant SSCs not procured from an NQA-1 evaluated supplier (i.e., evaluated for the specific components or services).

NOTE: At-risk procurement and installation activities may be approved by the Chief Engineer or designee. In those cases, at least section 8 of the CGI dedication form must be completed, and existing processes (e.g., QAIPS, conditional acceptance tags, NCRs, etc.) must be used to ensure the item is not placed into service prior to approval of the complete CGI dedication package.

4. Additional guidance on commercial grade item dedication can be found in ASME NQA-1-2004, NON-MANADATORY APPENDIX 7A-2; EPRI NP-5652, June 1988; and EPRI TR-102260, March 1994 (i.e., these documents can be found in the Engineer's Toolbox, CGI Info folder).

4.2 Identify Item and Item Safety Classification

Responsible Engineer

1. Identify the item to undergo the dedication process and the need to establish requirements for that item.

2. If the item's safety classification is known (e.g., is identified in RPP-8792, "Subsystem and Component Level Safety Equipment List for Tank Farms Safety System"), go to Section 4.3.

Lead Discipline Engineer

3. If the item being evaluated has not been classified, identify/approve the safety classification in accordance with TFC-ENG-FACSUP-23 and RPP-RPT-29160, and go to Section 4.3.

4.3 Establish Documentation Needs

Responsible Engineer

1. Review existing CGID packages to determine if a dedication has been performed for a comparable commercial grade item.

2. If an existing CGID package exists, use it as an aid in developing the CGID package for the new item and or new application.

4.4 Determine Critical Characteristics

The Commercial Grade Item Dedication package must be supported by a technical evaluation. The purpose of the technical evaluation is to ensure that the design is appropriate for the intended safety function. The credible failure modes of an item in its normal operating, abnormal operating, and credited accident environments and the effects of those failure modes on the ability to fulfill the safety function must be evaluated and documented in the technical evaluation and selection of the critical characteristics.

Responsible Engineer

1. Determine the critical characteristics for acceptance of the item.

   NOTE: Refer to Attachment C for assistance with a description of what critical characteristics are, and how to identify critical characteristics.

   a. If a technical evaluation information for the item is available from existing technical baseline documents, use them to establish critical characteristics for acceptance without

performing a new determination of critical characteristics for design.

b. If technical evaluation information cannot be obtained at the level of detail necessary, determine critical characteristics for acceptance based on an analysis of safety functions and failure modes and effects. This technical evaluation will use the process outlined in Attachment C, Section 1.4, Item (2), and be performed and documented in accordance TFC-ENG-FACSUP-C-02.

2. Ensure critical characteristic selection for acceptance address the following:

   - Identifiable and measurable attributes or variables appropriate for the safety function.

   - Criteria related to the location of the item in the facility or criteria addressing the most severe location of the item in the facility, unless controls are in place to prevent usage in undesignated locations.

3. Document the critical characteristics, and the basis for the critical characteristics for acceptance, in Section 3 of A-6002-544.

4. Document the critical characteristics for acceptance in Section 5 of A-6002-544.

4.5 Determine Acceptance Criteria and Methods

Responsible Engineer

1. Determine the following:

   - Acceptance criteria and allowable tolerances, where applicable, for each of the critical characteristics listed in Section 5 of A-6002-544.

   - The method(s) of acceptance that will be used to verify the critical characteristics will include selecting one or more of the methods discussed in Attachment A and noting the selection in Section 5 of A-6002-544.

   - The applicable testing procedure to be used if testing is a selected verification method.

     NOTE: If testing is required, then reference or attach the existing or newly prepared test procedure in Section 5 of A-6002-544.

4.6 Obtain Initial Reviews and Approval to Proceed with Verification

NOTE: Signatures below denote that the signer has reviewed all relative and pertinent information for their areas of responsibility, including assurance that the information provided is both complete and accurate.

Design Organization	1.	If a design organization staff member prepared A-6002-544, ensure that it is reviewed and signed in Section 7 by the design agent.
Responsible Engineer	2.	Complete and/or review and approve the dedication form for completeness and technical adequacy.
	3.	Sign appropriate blank in Section 5 of A-6002-544.
Quality Assurance Engineer	4.	Review and approve the dedication form for adequate QA requirements, and sign Section 5 of A-6002-544.
Lead Discipline Engineer	5.	Review and approve the dedication form for technical adequacy, and sign Section 5 of A-6002-544.
Responsible Engineer	6.	Submit initial reviewed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.

4.7 Verify Critical Characteristics

Responsible Engineer	1.	Distribute the dedication package to the responsible implementing organization(s) for verification of critical characteristics and processing as identified in step 2 below. NOTE 1: Dedication package consists of the form plus supporting documentation. NOTE 2: Implementing organizations may include tank farm operations, construction, engineering, quality assurance, procurement support, or an offsite laboratory or testing agency, among others that could have responsible actions to complete the dedication process.
Implementing Organization	2.	Perform the following implementation activities in accordance with this procedure, TFC-PLN-02, and TFC-ESHQ-Q_INSP-C-01. a. Complete the commercial grade item dedication activities and documentation on the dedication form in accordance with the instructions and any test procedures provided. b. Segregate and (green) tag (or otherwise identify) the item(s) that have been satisfactorily dedicated to ensure traceability back to the dedication package.

4.8 Obtain Final Reviews and Approval

Design Organization Staff Member	1.	If a design organization performs the verification function, ensure that it is reviewed and signed in Section 5 by the Design Agent.
Responsible Engineer	2.	Review and approve the completed dedication form for completeness and technical adequacy, and sign Section 7 of A-6002-544.
Quality Assurance Engineer	3.	Review and approve the dedication form for adequate QA requirements completion, and sign Section 5 of A-6002-544.
Responsible Manager	4.	Review and approve the upgrade dedication package for completeness and technical adequacy, and sign Section 5 of A-6002-544 as the design authority.
Responsible Engineer	5.	Submit completed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.
	6.	Link the completed CGID record to the component in CHAMPS. (Instructions for linking records in CHAMPS can be found on the TFCHAMPS website.)

4.9 Commercial Grade Item Dedication Package Changes

Responsible Engineer, Design Organization Staff Member, Quality Assurance Engineer, Implementing Organization	1.	Process changes to completed dedication packages in the same manner as the original dedication package in accordance with Sections 4.1 through 4.8 of this procedure. NOTE: All revisions shall be numerical (e.g., Rev. 1, 2, 3, etc.).

5.0 DEFINITIONS

NOTE: See TOC Glossary for definitions of safety equipment list, safety significant structures, systems, and components; and other terms common to many engineering procedures.

Commercial grade item. A structure, system, or component, or part thereof, that affects its safety function, that was not designed and manufactured in accordance with the requirements of ASME NQA-1.

Component. A piece of equipment such as a vessel, pump, valve, core support structure, relay or circuit breaker, which is combined with other components to form an assembly. Components typically are designated with an identification number (e.g., tag no.).

Critical characteristics. Important design, material, and performance characteristics of a commercial grade item or service that, once verified, will provide reasonable assurance that the item or service will perform its intended safety function.

Dedication. An acceptance process performed in accordance with ASME NQA-1 to provide reasonable assurance that a commercial grade item or service will successfully perform its intended safety function and, in this respect, is deemed equivalent to an item or service provided under the requirements of ASME NQA-1.

Fit. Those characteristics of an item that define the location and connection of installation interfaces (e.g., dimensions, match up, and method of mounting).

Form. Those characteristics of an item that define the physical envelope (e.g., type or style of item, weight, material composition, and dimensional shape).

Function. The operation an item is required to perform to meet the component or system design basis including passive operations such as pressure containment.

Item. An all inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, product, structure, subassembly, subsystem, system, or unit. (In this procedure, item is used predominantly to represent a part and/or component.)

Part. Items from which a component is assembled (e.g., resistors, capacitors, wires, connectors, transistors, lubricants, O-rings, springs, bearings, gaskets, bolting, and seals).

Work order. A collection of documents used to release and control work (e.g., through the Work Management System) that includes special work instructions, drawings, hold points, any specific radiological or toxicological control requirements, and pre-approved procedures.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Commercial Grade Item Dedication Form (A-6002-544)	N	Y	L	ADM-17.32a	N/A	IRM Service Provider

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. ASME NQA-1-2004, "Quality Assurance Program Requirements for Nuclear Facilities."
2. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. TFC-ENG-FACSUP-C-23, "Equipment Identification and Date Management."

2. TFC-ENG-DESIGN-C-25, "Technical Document Control."

3. TFC-ENG-DESIGN-C-34, "Technical Requirements for Procurements."

4. TFC-ENG-SB-C-06, "Safety Basis Development."

5. TFC-ENG-FACSUP-C-02, "Operability/Technical Evaluations."

6. TFC-ESHQ-Q_C-C-03, "Control of Suspect/Counterfeit Items."

7. TFC-ESHQ-Q_INSP-C-01, "Control of Inspections."

8. TFC-ESHQ-Q_ADM-C-02, "Nonconforming Item Reporting and Control"

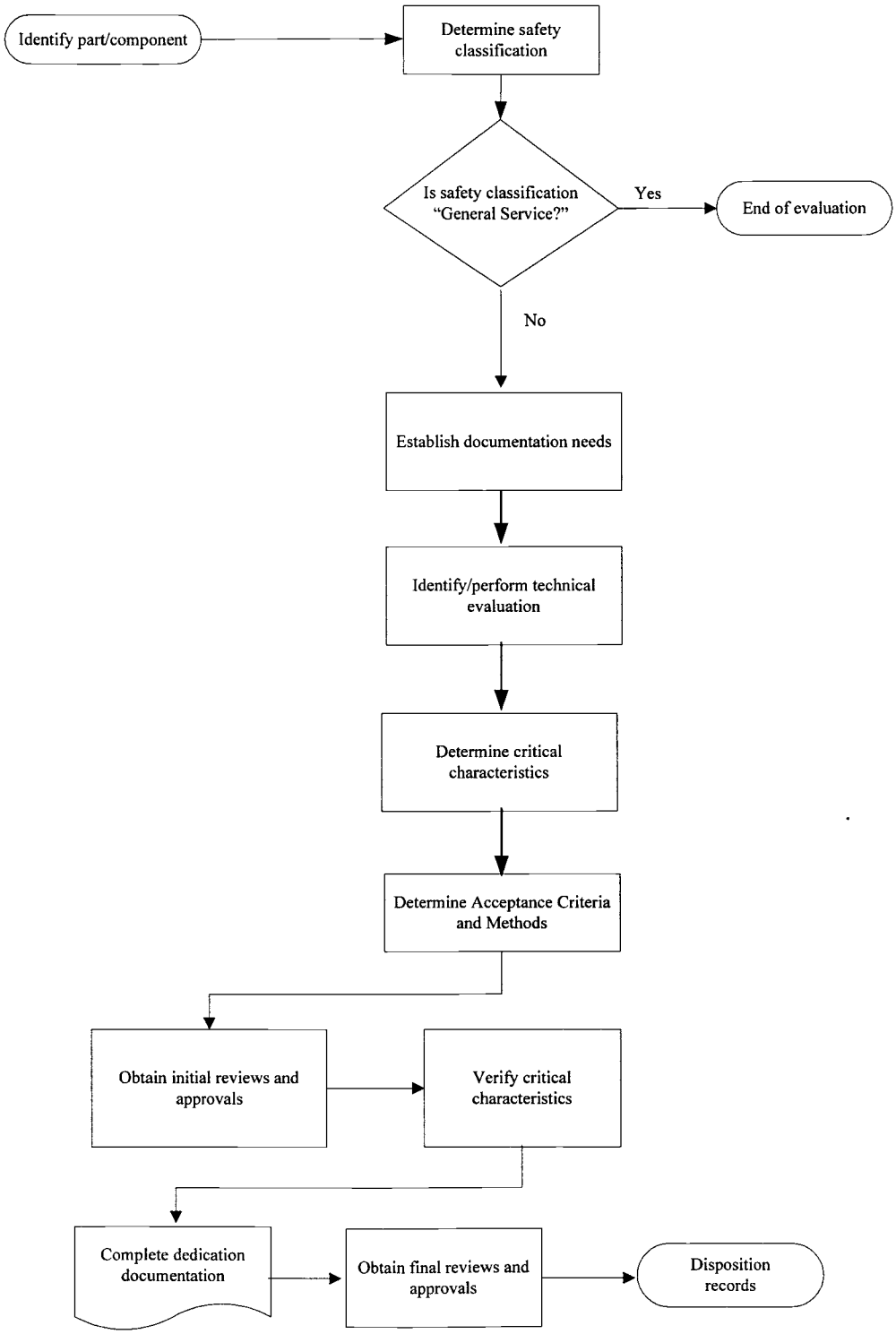
9. RPP-RPT-29160, "Methodology for Equipment Safety Classification and QA Level Determination."

10. TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)."

11. EPRI NP-5652, June 1988, " Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)."

12. EPRI TR-102260, March 1994, " Supplemental Guidance for the Application of EPRI Report NP-5652 on the Utilization of Commercial Grade Items."

Figure 1. Commercial Grade Item Dedication Process Flowchart.



ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS

(Used in conjunction with A-6002-544)

Heading

Commercial Grade Item No: A unique number (CGI-XXXXX) obtained for the commercial grade item dedication form from the Hanford Document Numbering System (HDNS).

NOTE: CGI numbering allows for "dash numbers" to be inserted in the header block provided. The "dash numbers" are intended as user-defined alphanumeric designators to assist in identifying the CGI form and being able to relate it to a particular component, component location, project, etc. For example, it might be a component's Equipment Identification Number (EIN).

Related ECN No: If the commercial grade item dedication involves a design change (e.g., a revision to a drawing or specification), include the related ECN No.; otherwise, enter "NA."

Title: A brief descriptive title indicating what and where.

Work Order No. Enter the number of the work order number that will be used for verification of critical characteristics and/or used to install the commercial grade item (if known).

Rev. No.: Provide the revision number or enter "NA," as applicable.

Reason for Revision: Describe why a revision was prepared or enter "NA," as applicable.

Key words: Enter key words useful for searching on RMIS or other document control database for this dedication package.

Responsible Engineer: Identify the individual assigned and company assigning responsible engineer responsibility for this dedication package (no signature required in this block).

Section 1 - Part Information

In this section, the following information shall be listed as applicable. If a component is the subject of the commercial grade item dedication, rather than a part, Section 1 is left blank.

1.1 Item number: Enter either the requisition number or the spare parts stock number.

1.2 Manufacturer: Enter the name of the manufacturer of the part being evaluated.

1.3 Supplier: Enter the name of the supplier If an Organization other than the manufacturer is going to supply the part or If the evaluation is for existing stock and the supplier is known. If the supplier is the same as the manufacturer, enter "same."

1.4 Mfr. Part/Model No.: Self-explanatory

1.5 Supplier's P/N: Supplier's part number (see Section 2.0 - item 2.7)

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

1.6 Part Description: Enter a comprehensive technical description derived from design documents and/or vendor/manufacturer published data. Format by noun first (e.g., transmitter, pressure, 3-15 PSIG input, 4-20 mADC output; or valve, stem, 316 SS).

1.7 End Use Description: Enter the application for the part being evaluated. This description should be stated so that the reviewer will understand how the part is applied in the host component (e.g., body to bonnet bolting, inlet flange gasket, pump mechanical seal).

Section 2 - Component Information

Enter the following information as applicable. Enter "NA" in blocks that do not apply.

2.1 Equip. Number: This is a unique identifying number for a component that is (or will be) installed in an operational nuclear facility. If the commercial grade item dedication process is being applied to a component with multiple plant locations and the same safety function application (i.e., Sections 4, 5, and 6 of the commercial grade item dedication form are the same for each location), list the associated equipment number(s). For such situations, Sections 1 through 7 and the first half of Section 8 of the form need to be only filled out once. Individual copies of Section 8 with the initial review and approval signatures may then be used to document the verification activities for the component at each location. If the safety function application is not the same, a separate commercial grade item dedication package shall be prepared, unless the dedication is for a bulk commodity item with only a passive safety function(s) (e.g., bolts, conduit, Unistrut[1]). These types of bulk commodity items may be dedicated with the same package for multiple plant locations and different safety function applications as long as the most stringent design requirements and associated critical characteristics are used in the dedication process (e.g., as related to temperature, design loads, radiation exposure).

2.2 Specification Number: Enter the applicable procurement or construction specification number for the component.

2.3 Manufacturer: Enter the manufacturer of the component.

The manufacturer of a part being evaluated may not necessarily be the same as the manufacturer of the part's host component (e.g., evaluating a Barksdale switch on a Pittsburgh air dryer vs. a Limitorque[2] pinion gear on a Limitorque actuator). In all cases, during implementation of this procedure, if any supplier information is the same as manufacturer information, the applicable supplier blocks shall be marked "same."

2.4 Past P.O. Number: Enter the purchase order number that supplied the existing component.

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[1]Unistrut is a registered trademark of Unistrut Corporation.

[2]Limitorque is a registered trademark of Limitorque Corporation.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)
(Used in conjunction with A-6002-544)

2.5 Mfr. Part/Model No.: This may also be a manufacturer's drawing number. If this is the case, an attempt should be made to determine the revision used to manufacture the component to aid in performing the type of replacement evaluation.

2.6 Equipment Supplier: Enter the Organization that supplied the component if it differs from the manufacturer.

2.7 Equipment Supplier's Part Number: Complete this block If the supplier has assigned a unique component or drawing number that is different from the manufacturer's assigned part/model (component) or drawing number.

If it is determined in the course of the evaluation that the supplier performed conditioning or otherwise enhanced the quality of the item for commercial grade item dedication purposes, future procurement should be sole sourced (if possible) to this supplier.

2.8 Component Description: Describe the component and its unique RPP service application (e.g., 8-inch relief valve used in a specific tank pressure relief system). For multiple applications (see 2.1 of this attachment), identify the various applications. If the applications are the same, but there are different systems or units, list related identifiers (e.g., A, B, C, etc.).

Section 3– Determine Critical Characteristics

3.1 Identify the Technical Baseline document(s) or Technical Evaluation used to establish critical characteristics for acceptance.

3.2 Document part/component number, all of the applicable characteristics that affect the safety function of the item and which are critical characteristics for CGID acceptance.

3.3 Document the basis for the selection of critical characteristics for CGID acceptance. (Provide a description of why once selected and verified, the critical characteristics provide a reasonable assurance that the item/service will perform its safety function.)

Section 4 - References

List all references used for the safety classification. Any documents that are not attached must have an identification number listed so that the document may be located.

4.1 National Codes/Standards: List any applicable codes or standards (e.g., ASME, NEMA, ASTM, IEEE).

4.2 Safety Analysis Report: Reference the applicable safety analysis report information in this section.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

4.3 Drawings: Reference applicable Project Hanford drawing information in this section (e.g., flow, logic, or wiring diagrams, schematics). In addition to the drawing number, list the type of drawing.

4.4 Vendor Technical Manuals: List the number of the applicable, approved vendor manuals in this section.

4.5 Manufacturer/Supplier Information: List any information obtained from outside sources in this area. As stated above in the drawing section, list the type of information referenced. If the referenced information is not readily available, it should be made an attachment to this form in the commercial grade item dedication package.

4.6 Other: List any other resources used during the dedication process that are not covered by 6.1 through 6.5 above.

Section 5 - Verification of Critical Characteristics

5.1 Enter those critical characteristics for acceptance that shall be verified as part of the dedication (e.g., dimensions A & B). Some form of an item's identification is always a critical characteristic (e.g., mfr. part or model number, ASTM markings).

5.2 Enter the acceptance criteria and allowable tolerances, if applicable, for each of the critical characteristics identified (e.g., dimension A-3.3" to 3.5", dimension B-1 3/16" to 1 5/16").

5.3 For number to test, this entry is either 100% or "Sample," based on ANSI/ASQC-Z1.4 or other sample basis. If a sample is used, document the basis for the sample size (e.g., ANSI/ASQC-Z1.4).

5.4 Indicate the acceptance method(s) by placing the applicable method number(s) (1, 2, 3, 4, and/or 5) in the appropriate block. More than one acceptance method may be used for verification of critical characteristics. (Further discussion on acceptance methods are provided at the end on this attachment.) NOTE: "Receipt Inspection" (for new procurements) <u>must</u> be one of the acceptance methods employed.

5..5 Indicate the test procedure or purchase order receiving report number used to support the chosen acceptance method(s) if applicable.

5.6 Indicate the number of items tested and the number of items that failed (e.g., 10/2).

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

5.7 Indicate the verifying Organization (e.g., Quality Assurance, procurement support, offsite laboratory, etc.).

> NOTE: For those critical characteristics verified by receipt inspection, the responsible engineer or QA shall note the Verifying Organization as "AVS" or "WRPS QC", sign the critical characteristics as being verified, and attach a copy of the completed Quality Assurance Inspection Plan (QAIP), and associated documents (e.g., test reports, certificates of calibration, material test reports, certificates of conformance, etc.).

5.8 The person evaluating the results shall print their name, then sign and date the form. This is required both for items determined to be satisfactory or unsatisfactory. If the critical characteristics have been previously verified and documented on another document, signature of the original verifier is not required. Indicate the supporting documentation in this space. If any test is determined to be unsatisfactory, the reason for the failure shall be listed in the "Comments" block, and the form shall be returned to the responsible engineer or design organization for disposition.

5.9 Indicate any special instructions required for testing performed as part of the dedication process (e.g., calibration records of instruments used are required or the use of a qualified material testing vendor). (Use a continuation sheet, as necessary.)

5.10 For details on the initial and final approval signatures, see Sections 4.10 and 4.12 of this procedure.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

Acceptance Methods and Customer/Supplier Activities

Acceptance Method	Specific RPP Activities	Specific Supplier Activities
Method 1 ***Special Tests and Inspections***	• Determine sample size. • Determine post-installation testing requirements. • Determine special receipt tests and inspections. • Accept item via special receipt inspections. • Accept item via post-installation testing. Note: Method 1 does NOT require utilization of an additional method.	• Furnish technical design information to enable verification of critical characteristics.
Method 2 ***Commercial Grade Survey of Supplier***	• Conduct survey of commercial grade program. • Require the supplier to invoke the controls necessary to verify critical characteristics. • Accept item based on supplier Certificate of Conformance (see ASME, NQA-1, Requirement 7, Section 503) verified by commercial grade survey. Note: Method 2 is generally employed for commodity type items and is used in conjunction with a supporting method. (Can be used as primary basis for dedication in addition to normal receipt inspection.)	• Implement controls necessary to verify critical characteristics. • Provide customer with a Certification of Conformance (as requested).
Method 3 ***Source Verification***	• Conduct source verification. • Accept item based on documented source verification results. Note: Method 3 is used in conjunction with receiving inspection to verify the documentation of the source inspection/test.	• Implement item-specific design, fabrication, assembly, manufacturing, testing, or inspections controls substantiated by the source verification for a particular commercial grade item. • Allow customer access to facilities to conduct source verification.
Method 4 ***Acceptable Supplier / Item Performance Record***	• Establish documented performance record. • Monitor performance of item. • Confirm applicability of independent product test results, INPO NPRDS, commercial program audits/surveys conducted by industry groups, utilization of national codes and standards, supplier responses to commercial grade program controls, results of periodic maintenance surveillance, results of successfully employing other acceptance methods. • Accept item by issuing certification that is based on supplier/item performance record. Note: Method 4 is only used in conjunction with one or more of the other methods.	• Respond to commercial grade program controls questionnaire. • Ensure item complies with national codes and standards, if applicable.
Method 5 ***Receipt Inspection***	• A post-delivery inspection performed as part of the acceptance process to verify that ordering requirements have been met. The ordering requirements to be verified may include: – Relatively simple or standard inspections specified by the ordering requirements for order acceptance including visual, dimensional, nondestructive, etc. inspections and examinations. – Inspection/tests specified by the purchase requisition to be performed for order acceptance by RPP Work Groups – .Requirements for deliverable supplier documentation relative to engineering or quality data. Note: Method 5 is only used in conjunction with one or more of the other methods.	• Furnish information, test reports, technical data, Certificate of Conformance see purchase order requirement.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS

1.0 IDENTIFICATION AND SELECTION OF CRITICAL CHARACTERISTICS
(Ref EPRI NP-5652, June, 1988 and EPRI TR-102260, March, 1994)

Critical characteristics are identifiable and measurable attributes/variables of a commercial grade item which once verified, provide reasonable assurance that the item received is the item specified. Based on the performance and design basis for an item, a variety of characteristics can be identified that are critical for satisfactory performance. However, for purposes of establishing critical characteristics for acceptance, only certain of these must be verified to provide reasonable assurance that the item specified is the item received. Commercial grade items which perform safety functions inherently have one or more characteristics critical to assuring equivalency to the item it is intended to replace. The item's part number by definition is a critical characteristic.

1.1 Types of Critical Characteristics

Critical characteristics that could be identified, in addition to the part number, are physical characteristics of an item, identification markings, or performance characteristics of the item. A general listing of typical critical characteristics is provided in Table B-1. A listing of typical commercial grade items, their intended application, and potential critical characteristics is provided in Tables B-2 and B-3. The potential critical characteristics associated with the items in Tables B-1, B-2, and B-3 are provided for illustration only. These lists are not intended to be all inclusive or exclusive of critical characteristics which may be deemed important to specific applications. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified. Commercial grade items intended for installation in seismically or environmentally qualified applications require critical characteristics necessary to assure that the original qualification of the parent component is maintained. A discussion on maintaining seismic and environmental qualification is provided in Appendix F of EPRI NP-5652, June, 1988. Commercial grade items intended for generic safety-related applications rather than for installation in specific applications require special consideration when selecting critical characteristics. Critical characteristics should be selected based on the most severe conditions encountered in the generic application unless controls are in place to prevent inappropriate use. These controls should be sufficient to ensure that commercial grade items are not used in applications for which they have not been evaluated and accepted. A discussion regarding generic and specific applications is provided in Appendix G of EPRI NP-5652, June, 1988.

1.2 Selection of Critical Characteristics

It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received meets specified requirements. The term "critical characteristics" is defined as those "measurable and identifiable attributes/variables of a commercial grade item, which once selected to be verified, provide reasonable assurance that the item received is the item specified." It is important to differentiate those critical characteristics selected to describe "critical characteristics for acceptance," and a broader definition for "critical characteristics for design." Critical characteristics for design are "those properties or attributes

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-1. General Listing of Typical Critical Characteristics.

Product Identification

- Color coding
- Display type (scale, graduation)
- Enclosure type
- Industry standard markings
- Nameplate data
- Part number/unique identifier

Physical Characteristics

- Balance
- Capacitance
- Cloud point
- Coating
- Color
- Composite material hardness
- Concentration
- Conductivity
- Continuity
- Density/Specific gravity
- Dielectric strength
- Dimensions (to within manufacturer's tolerance)
- Drop point
- Ductility
- Durometer hardness
- Elasticity
- Fatigue resistance
- Flammability
- Flashpoint
- General configuration or shape
- Homogeneity
- Inductance
- Leachable halogen content
- Luminescence
- Material of construction
- Permeability
- Plating
- Polarity
- Pour point
- Purity
- Resilience
- Resistance
- Solubility
- Spring constant
- Surface finish
- Surface hardness
- Tensile strength
- Torque
- Viscosity
- Weight

Performance Characteristics

- Accuracy
- Burn-in endurance
- Chatter
- Current rating
- Cycle time
- Deadband width
- Flow rate
- Gain
- Horsepower
- Input/output voltage
- Interrupt rating
- Interrupting current
- Leakage
- Load rating
- Open/closure time
- Operability (fail open/close, stroke)
- Operating range
- Performance during (no drift) under voltage conditions
- Pick-up/Drop-out voltage
- Power rating
- Pressure drop
- Pressure rating
- Repeatability
- Ride out
- Rational direction
- Set point stability
- Speed
- Time/current response
- Voltage rating

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-2. Critical Characteristics Applied to Specific Items.

Commercial Grade Item (Application)	Critical Characteristics
Valve Stem	Configuration, dimensions, material, tensile strength, ductility, finish, markings, hardness
Pump Impeller	Configuration, dimensions, material, hardness, balance, flow rate
Motor	Nameplate data (horsepower, speed), insulation class, frame size, materials, weight, shaft type, coupling type, bearing types
Nonmetallic Diaphragm	Configuration, dimensions, material, durometer hardness, reinforcement material
Solenoid Valve	Configuration, size, pressure rating, materials, voltage rating, current rating, coil class, open/closure time
Limit Switch	Configuration, dimensions, materials (metallic and nonmetallic), markings, operability, voltage rating, current rating
Impeller Key	Configuration, dimensions, material, hardness
Spring	Configuration, dimensions (free length, coil diameter), spring rate, finish
Valve Packing Gland	Configuration, dimensions, material, tensile strength, hardness, finish
Filter Regulator Assembly	Configuration, dimensions, materials, flow rate, pressure range, pressure rating, temperature rating, filter micron size

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-2. Critical Characteristics Applied to Specific Items. (cont.)

Commercial Grade Item (Application)	Critical Characteristics
Pinion Gear	Configuration, dimensions, material, hardness, pitch
Crane Wheel Axle	Configuration, dimension, material, tensile strength, hardness, finish
Shaft Coupling	Configuration, dimensions, materials, hardness
Anchor Bolt	Configuration, dimensions, material, wedge hardness, pitch
Torque Switch	Configuration, dimensions, materials (metallic and nonmetallic), operability
Pump Mechanical Seal Assembly	Configuration (completeness of assembly), materials, finish, leakage, leachable halogen content, dimensions
Valve Seal Ring	Configuration, material dimensions, finish leakage
Integrated Circuit	Configuration, gain, input/output impedance, frequency responses, operability
Pressure Transmitter	Configuration, voltage rating, current output, pressure rating, materials, accuracy
Control Switch	General configuration, contact configuration, voltage rating, current rating, materials, dimensions, operability
Transistor	Markings, gain, input/output impedance, current rating, voltage rating, operability

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-3. Critical Characteristics Applied to Generic (Commodity) Items.

Commercial Grade Item	Critical Characteristics
Bearing	Configuration, dimensions, load rating, material, model number
Bolting	Configuration, dimensions, pitch, material, tensile strength, hardness, plating
O-ring	Dimensions, material, durometer hardness, elongation, leachable halogens
Terminal Block	Configuration, voltage rating, current rating, materials, dielectric strength
Crimped Terminal Connector	Configuration, material, dimensions (wire size, ring tong size), voltage rating, continuity, tensile pullout strength, color
Relay	Configuration, pick-up/drop out voltage, voltage rating, current rating, chatter, response time
Fuse	Configuration, current rating, interrupt rating, time/current response, dimensions
Resistor	Configuration, markings, resistance, power rating
Drive Belt	Dimensions, cross-sectional shape, ride out, fatigue resistance, load rating, material, tensile strength
Spiral Wound Gasket	Configuration, dimensions, markings, style number, materials (filler and windings), pressure rating, leachable halogens, spiral density
Cotter Pin	Configuration (point type), dimensions, material, finish, hardness

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-3. Critical Characteristics Applied to Generic (Commodity) Items. (cont.)

Commercial Grade Item	Critical Characteristics
Pressure Switch	Configuration, dimensions, material (pressure retaining parts), voltage rating, response time, accuracy, nameplate data, pressure range, wire rating, enclosure type, dielectric strength (insulation), deadband width
Temperature Switch	Configuration, dimensions, material, voltage rating, response time, accuracy, nameplate data, temperature range, wire rating, enclosure type dielectric strength (insulation), deadband width
Lubricating Grease/Oil	Color, specific gravity, viscosity, drop point, cone penetration, pour point, chemical composition, cloud point
Fuel Oil	Density, flash point, cloud point, pour point, kinematic viscosity, chemical composition, BTU rating
Framing Device	Configuration, shape, dimensions, material, tensile strength coating
Material (e.g. Plate, Angle)	Dimensions, shape, material, tensile strength, hardness, ductility, markings, coating

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

which are essential for the item's form, fit and functional performance. The selection of critical characteristics for acceptance is "based upon the complexity, intended safety-related function, and performance of the CGI" using engineering judgment. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified.

1.3 Proper Relationship of Critical Characteristics

Regarding critical characteristics for acceptance, critical characteristics that could be identified are physical characteristics of an item, performance characteristics of the item as well as product identification characteristics. They should include some number of "critical characteristics for design" as well as product identification characteristics such as part number. The critical characteristics for acceptance that are physical and performance characteristics are a subset of the larger population of critical characteristics for design. Physical or performance characteristics of the item that may have been specified in the original equipment specification and affect the item's safety-related functional performance should be considered as those selected for verification. If the original equipment specification did not specify technical and quality requirements at the item level, then the critical characteristics selected for verification during the acceptance process should be based on "the complexity, intended safety-related function, and performance" of the item. Once the critical characteristics for acceptance have been selected for a commercial grade item, each one should be verified using one or a combination of the four acceptance methods. Verification of the selected critical characteristics for acceptance should provide the purchaser confidence that the remaining characteristics of the item are also conforming to the item design. In achieving reasonable assurance, it is assumed that if the properly selected critical characteristics for acceptance are conforming, then the remaining critical characteristics for design were also adequately controlled by the supplier. Sole reliance on part number verification is inadequate to reasonably assure the CGI received met specified requirements. Similarly, reliance only on the verification of product identification characteristics is generally inadequate to reasonably assure the CGI received met specified requirements.

It must be recognize that many items are uniquely identified by means other than by a part number. This may affect the selection of product identification critical characteristics for verification during the acceptance process. Caution should be used when relying on part number as contributing to the item acceptance if there is no basis for knowing that the part number has been correctly applied to the item.

1.4 Lessons Learned

If adequate technical and quality requirements for the item are available from existing design basis information, then they may be used to establish critical characteristics for acceptance without performing a new determination of critical characteristics for design. Original item specifications (or current approved revisions) are the preferred source for determination of critical characteristics for design, where such specifications are available or can reasonably be obtained. Specifications used to identify critical characteristics for design must be at the appropriate level of detail for the item being procured. For example, if an entire replacement valve is being procured, then the valve specification may be the appropriate specification for determination of critical characteristics for design. However, if a replacement valve stem is being procured, then

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

the valve, specification alone may not completely define the stem's technical and quality requirements. Additional design information may be available from the valve supplier. If this information can be reasonably obtained, it is the preferred source of information from which to determine critical characteristics for design. If adequate design information cannot be obtained at the level of detail necessary, then determination of critical characteristics for design based on an analysis of safety functions and failure modes and effects may be performed.

An effective process for establishing critical characteristics is as follows:

Process

- What are the safety function(s) of the host component? (Refer to EPRI Report NP-6895 for detailed guidance)
- What are the plant-specific design function(s) (including known safety functions) of the item? (Refer to EPRI Report NP-6406 and EPRI Report NP-6895 for detailed guidance)
- What are postulated, credible failure mechanism(s) of the item?
- Will failure mode adversely affect component/system design function?
- What properties or attributes are essential for the item's form, fit and functional performance?
- What properties or attributes provide reasonable assurance the item received meets specified requirements and the basis for their selection?

1.5 Identification and Selection of Critical Characteristics for Acceptance/Achieving Reasonable Assurance in the Context of CGI Acceptance

This example is provided to demonstrate the identification of critical characteristics for design and the selection of critical characteristics for acceptance. It is further developed to demonstrate achieving reasonable assurance in the context of CGI acceptance.

Example

I. Replacement Item: Valve Stem (sixteen are procured)

II. Host Component: Active valve required to open and close

III. Function of Item and Functional Classification:
The plant-specific design function of the valve stem is first identified considering the Host component's safety function. The safety function of the stem is to open and close the valve during normal and accident conditions within specified times.

IV. Factors considered in achieving reasonable assurance:

A. Were the proper critical characteristics for acceptance selected for verification (based upon the complexity, intended safety-related function, and performance of the item)?

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Critical characteristics for design (CCDs) are first considered. The CDDS may be formally documented if an equivalency evaluation was required. Otherwise, potential CCDs may be informally determined by examining procurement technical requirements, the supplier's part drawing, and considering the valve stem's safety function.

The supplier may not control all critical characteristics for design unless he had made a commitment. This commitment is evidenced by:

(a) Accepting technical requirements related to the CCDs in the purchase order

(b) Identifying that it controls the CCDs in its product literature (e.g., catalog, product specification)

(c) Internal program commitment (e.g., part drawings, sub-supplier purchase order requirements).

Critical Characteristics for Design for the subject valve stem are determined to be:

- Dimensions including tolerances necessary for the item's functional performance
- Material chemical composition and grade
- Yield strength
- Tensile strength
- Reduction in area (indication of ductility)
- Hardness
- Surface finish.

The original equipment manufacturer established the technical requirements for the stem based on the host component's design function.

The critical characteristics for acceptance are selected from the critical characteristics for design. Also, considered in the selection process are product identification characteristics. After considering the above potential critical characteristics, the responsible technical person selects the following critical characteristics for acceptance:

- Stem length
- Stem diameter
- Material grade
- Hardness
- Configuration
- Part number.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

B. What is the degree of verification of each critical characteristic for acceptance?

Part number	Visually inspected to ensure the item was tagged with the Manufacturer's part number
Stem length	Measured dimension to verify it was 6.250" + 0.000" - 0.002"
Stem diameter	Measured dimension to verify it was 1.663 + 0.001"

NOTE: Both dimensions were further verified by measuring the stroke time of the valve during post-installation test.

Configuration	Visually inspected configuration by comparing the item to the manufacturer's published product description (i.e., valve assembly drawing).
Material grade	Verified material grade is **ASTM A276**, Type 316 Stainless steel with an alloy analyzer utilizing the services at an approved test facility.
Hardness	Verified Brinnell hardness is between 165 and 195 utilizing hardness tester owned by the utility.

C. Sample Size

Sixteen items were procured on the purchase order and a lot of sixteen was established. EPRI Report NP-7218 was referenced to determine a sample size for each critical characteristic for acceptance. Results are shown below.

Critical Characteristics for Acceptance	**Sample Size**	**Reference**
Part Number, Configuration,	16	EPRI Report NP-7218 (100%)
Stem Length & Diameter	5	EPRI Report NP-7218 (Normal)
Material Grade	3	EPRI Report NP-7218 (Reduced)
Hardness	10	EPRI Report NP-7218 (Tightened)

V. Discussion of Example:

An adequate technical evaluation was performed which enabled the purchaser to specify the item correctly. To accept the CGI for safety-related use, the user employed engineering judgment for considering several factors to achieve reasonable assurance. Selected critical characteristics for acceptance included both product identification and physical, comprising four measurable attributes and two identifiable attributes. Method I – Special Tests and Inspections was implemented to verify the selected critical characteristics using both receipt tests/inspections as well as post-installation testing. The degree of verification of each critical characteristic appropriately corresponded to the design functions of the item for its intended application. The sampling method was appropriate

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

for the item being procured. Upon completion of the critical characteristic verification, the user was reasonably assured the items received met specified requirements and were acceptable for safety-related use.

In summary, reasonable assurance is obtained that the item received meets specified requirements without having verified all CCDs. The verification activities provide sufficient confidence that the supplier has met his contractual obligation to provide an item meeting the procurement technical requirements.

Task# WRPS-PER-2008-0279.5

E-STARS[R] Report
Task Detail Report
08/06/2009 1541

TASK INFORMATION

Task#	WRPS-PER-2008-0279.5		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-05: Revise TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) to ensure that commercial grade item dedication is		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 06/02/2009
Reference	WRPS-PER-2008-0279	**Due**	06/08/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Route List	Inactive
	M.A. Knight non-concured with the following comment: John, please review phone message from Mark Knight on 05/22/09.	
	• Robinson, John M - Assign - Completed with comments - 06/02/2009 1127 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 06/02/2009 1207 *Instructions:*	
2	Corrective Action	Inactive
	CATPR-01-05: Revise TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier. This action addresses RC-01. Deliverable: Revised TFC-BSM-CP_CPR-C-06. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Robinson, John M - Assign - Completed with comments - 05/19/2009 1642 *Instructions:* ↳ *Routing List:* Route List - Inactive *Instructions:* • Janecke, J (Rick) - Assign - Completed with comments - 05/14/2009 1500	
	• Knight, Mark A - Review - Nonconcur with comments - 05/22/2009 1423 *Instructions:*	

ATTACHMENTS

Attachments

1. MD-63 PROCUREMENT OF FULL, ENHANCED OR COMMERCIAL QUALITY ITEMS DESIGNATED SAFETY SIGNIFICANT NOT PROCURED FROM AN EVALUATED SUP
2. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
3. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
4. EM-RP--WRPS-TANKFARM-2008-0002 update.htm
5. EM-RP--WRPS-TANKFARM-2008-0002.htm
6. Link to PER
7. Revised Procurement of Items Procedure
8. Revised Procurement of Items Procedure
9. RCA 2008-0279 ADDENDUM 5-19-09.pdf
10. Email accepting POI revisions to close PER
11. Email accepting POI revisions to close PER
12. TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials).doc
13. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
14. WRPS-PER-2008-0279.5 CLOSURE TF-MD-062,_Interim_Direction_with_Revised_Requirements_for_Procurement_of_Safety_Significant_SSCs_and_Commercial_Grade_Item_.doc
15. WRPS-PER-2008-0279.5 CLOSURE TFC-BSM-CP_CPR-C-06,_Rev G-6 Procurement_of_Items_(Materials).doc

COMMENTS

Poster	Janecke, J (Rick) - 05/14/2009 1500
Editor	Blank, Betsy S (Janecke, J (Rick)) - 06/02/2009 1127
	Completed
	TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) has been revised to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier, which addresses RC-01. Deliverable of revised procedure TFC-BSM-CP_CPR-C-06 is attached in E-STARS. The originator of the PER was Monica Kembel at the time the PER was originated. Monica is no longer with the tank farms and Gary Faust is

Task# WRPS-PER-2008-0279.5

	tracking progress on the PER and coordinating completion of corrective actions. Gary has approved the updated procedure TFC-BSM-CP_CPR-C-06 and concurs with closure of this corrective action. E-mail from Gary is attached in E-STARS.
Poster	Robinson, John M - 05/19/2009 1642
Editor	Blank, Betsy S (Robinson, John M) - 06/02/2009 1117
	Completed
Poster	Knight, Mark A (Bragg, David A) - 05/22/2009 1423
	Nonconcur
	John, please review phone message from Mark Knight on 05/22/09.
Poster	Robinson, John M (Blank, Betsy S) - 06/02/2009 1127
	Completed
	TFC-BSM-CP_CPR-C-06, Procurement of Items (Materials) has been revised to ensure that commercial grade item dedication is required for safety significant SSCs not procured from an evaluated supplier, which addresses RC-01. Deliverable of revised procedure TFC-BSM-CP_CPR-C-06 is attached in E-STARS. The originator of the PER was Monica Kembel at the time the PER was originated. Monica is no longer with the tank farms and Gary Faust is tracking progress on the PER and coordinating completion of corrective actions. Gary has approved the updated procedure TFC-BSM-CP_CPR-C-06 and concurs with closure of this corrective action. E-mail from Gary is attached in E-STARS.
Poster	Knight, Mark A (Bragg, David A) - 06/02/2009 1207
	Concur
	TFC-BSM-CP_CPR-C-06 incorporates the requirement to ensure that commercial grade item dedication is specified for safety-significant SSCs not procured from an evaluated supplier, The revised procedure also concurs with TFC-MD-062, which provides interim direction for procurement of safety-significant SSCs and commercial grade dedication. TFC-BSM-CP_CPR-C-06 is attached as objective evidence. TFC-MD-062 is also attached for reference only. The PER originator was contacted in person on 06/02/09 and concurs with the disposition. This action is complete.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/02/2009 1349
	Steelman, Tracy L -- CLOSED
	The PAAA Coordinator reviewed and approved for closure. tls 6/2/09

TASK DUE DATE HISTORY

Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	06/08/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Ownership matrix

1.0 PURPOSE AND SCOPE

This management directive places a requirement for two approvals in addition to those required by the Determination of Required Approvals (DRA) contained in TFC-BSM-CP_CPR-C-06 when purchasing items. The additional approvals are required for all requests for items that are Full, Enhanced or Commercial Quality and designated Safety Significant that are not procured from an evaluated supplier.

This management directive applies to Washington River Protection Solutions LLC (WRPS) personnel identified in Section 4.0.

2.0 IMPLEMENTATION

This management directive is effective on the date shown in the header and will remain in effect until the applicable procedure TFC-BSM-CP_CPR-C-06 can be revised.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 DIRECTIVE

4.1 Procurement of Full, Enhanced or Commercial Quality Safety Significant Items Not Procured From an Evaluated Supplier

All requests for full, enhanced quality or commercial quality items designated as Safety Significant that are not procured from an evaluated supplier must be approved by a designated QA and Engineering representative.

Requestor

1. Develop a Bill of Materials or Material Requisition per TFC-BSM-CP_CPR-C-06.

2. Route the Bill of Materials or Material Requisition per TFC-BSM-CP_CPR-C-06 attachment "Determination of Required Approvals." The additional approvals of a designated QA and Engineering representative will be acquired by email and attached to the Bill of Materials or Material Requisition.

5.0 DEFINITIONS

No terms or phrases unique to this management directive are used.

6.0 RECORDS

The following records are generated during the performance of this management directive:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Tank Farm Material Services System BOM or MR	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services

The identified record custodian is responsible for record retention and retirement in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

No documents external to this management directive are required for performance.

7.2 References

1. TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)."
2. TFC-BSM-IRM_DC-C-02, "Records Management."

From: Gibson, Elizabeth R
Sent: Monday, June 01, 2009 4:25 PM
To: ^Tank Farms Shift Operations; Adams, Edward J; Adams, Wendy L; Ahmer, Douglas W; Alexander, Sandy K; Allen, Clyde P; Allen, Darryl; Allen-Floyd, Julie C; Anderson, Kenneth J; Anderson, Rick A; Andrews, Jeffrey E; Armstead, John M; Atkins, Larry B; Austin, John L; Badden, James J (Jim); Baide, Daniel G (Dan); Baird, Kenneth A; Barger, David L; Barrett, Scott G; Basche, Amy D; Bauer, Roger E; Beaumier, Glenn R; Becker, Terry L; Bennington, Timothy L; Beranek, Fred; Berglund, Owen D; Berry, Larry G; Bevans, Sidney E; Bewick, Joseph A; Bickel, Eric E; Bishop, Daniel J; Blank, Betsy S; Boasen, Robin L; Boger, Robert M (Mike); Boness, Sharon L; Borrowman, Jerry E; Bowman, Tamara; Bradley, Bryon H; Brannan, Patrick B (Brad); Brey, K Kristine; Brey, Stephen L; Brooks, Rocky L; Brosee, Neil; Brown, David W; Brown, Nancy L; Brown, Robert L; Brown, Rodney J; Brule, Wayne G; Bryant, William H; Bunn, Kathie L; Burke, Christopher A; Burrows, Christopher; Burt, David L (Dave); Butler, J D (Dane); Calderon, Linda; Caldwell, Joyce A; Calmus, Ronald B (Ron); Carlile, Dave L; Carpenter, Keith E; Carrothers, Bradley M; Castleberry, Jim L; Cato, Diane M; Chapman, Stephen R; Cleveland, Evan D; Cole, David F; Coleman, George J; Collins, Tami L; Colosi, Kristin A; Conrad, James S (Scott); Cook, Randy W; Cordray, Lana L; Cost, Michael D; Cranston, Mark D; Crockett, David A (Dave); Crockett, James E (Jim); Culbertson, April M; Culver, Patsy D; Cuneo, Joseph R; Dale, Robert N (Rob); Daniels, F T (Tom); Darling, John E; Davis, Glenda M; Davis, Steven A; Davis, Theodore J (Ted); Day, Paul T; Decker, Quinten R; Deffenbaugh, Michael L; DeFord, Douglas K; Del Carlo, Rochelle J; Deleon, Sosten; Denning, Jeffrey L; DePeel, Michael J; Diiorio, Michelle D; Dixon, William T; Donley, Elizabeth A; Doss, Greggory C; Doss, Shelly D; Douglass, Stephen R; Duffy, William L; kdevitt@columbia-energy.com; rkoster@columbia-energy.com; Dunn, Frank M; Dunn, Robert B; Dupaquier, James C (Jim); Eberlein, Susan J; Eppler, Larry L; Erickson, Todd; Esvelt, Chad A; Everett, Brian K; Faust, Gary L; Ficklin, James W (Jim); Field, Jim G; Fish, Michael A; Flasch, Michael P; Flowers, Lon A; Fogg, Robin J; Foley, Richard W (Dick); Forester, Barbara A; Fox, Leann E; French, Raymond P (Ray); Galliher, Alicia K; Garcia, John G; Gardner, Greg A; Garello, Paul R; Garrett, Mark S; Gay, Douglas C; Gaydosh, William L; Geary, James E (Jim); Gerken, Mark D; Gilles, David A (Dave); Glaman, Linda; Goetz, Thomas G (Tom); Graham, Roy D (Pete); Graves, Greg P; Gray, Everett W Jr; Gray, Keith W; Greenough, Keith J Jr; Greenwell, Doug; Gregory, Robert E (Rob); Grigsby, J M (Mike); Guberski, John D; Gunderson, Dennis; Gustafson, Kevin A; Gutierrez, Richard V; Haan, Thomas P; Hall, K M (Kathleen) - CHG; Hamilton, Dennis W; Hamilton, Peggy; Hamm, Earnest R; Hampton, Clifford E; Hanford, Troy L; Hanni, Jonathan B; Hanson, Carl E; Hanson, Gregory N; Haq, Mian A; Harding, Ronald A; Hardy, Don B; Harris, John P III; Harris, Tammy C; Harrison, W D (Dale); Hartley, Danny C (Dan); Haskins, W B (Byrne); Hathaway, S L (Steve); Hay, James M (Mike); Hebert, Larry J; Heinemann, Jay L; Hendrickson, Alice R; Herndon, Van T; Heubach, Edward C II (Ed); Hickman, Bob T; Higbee, Kirk R; Higham, Dale B; Hinds, Andrea R; Hjellum, Allan D (Al); Hobbs, John R; Holbrook, Arlo R; Holloway, Jerry N; Homan, Dennis L; Hopkins, Gary P; Horner, Randell L (Randy); Houf, Mary J; Howard, Perry M (Pat); Howell,

Thomas G; Huber, Rodney H; Huddleston, Laura B; Hurson, Patrick J; Husa, Susan; Hyman, Sandra D; Iceberg, David W; Imhoff, Steven E; Jabara, James W; Janecke, J R (Rick); Jansons, Richard S; Jennings, Patrick (Rick); Johnson, Brian A; Johnson, Mark N; Lindholm, Mark A; Hatcher, Kathy A; Jennings, Thomas M; Jones, Gregory L (Greg); Jones, Kenneth L; Jones, Ronald W; Jones, Rudy A; Jordan, Kenneth N; Junt, Kasey Q; Keith, Lloyd J; Kelly, William; Kennedy, Edward E; Kent, Sandra H; Kidder, David E; Kimmel, Thomas S; Kirch, Nicholas W (Nick); Kissel, Jeffrey W; Kitchen, William A; Klos, James J (Jim); Knight, James O (Jim); Knight, Mark A; Kopp, Victoria L; Kost, Karyn E; Kramer, Timothy F; Kubie, Dennis L; Kummer, David A; Landes, Claude W; Landon, Matthew R; LaRock, Eric M; Larsen, Douglas C (WRPS); Latteri, Michael; Laws, Alan S; Le, Tuyet M; Lehman, Derek D; Lehman, William J (Jerry); Leshikar, Gregory A; Lesko, Andrew C; Lesko, Karen F; Lewis, Michael R (Mike); Littlejohn, Susan M; Livesey, Lee M; Livesey, Stephanie H; Loeffler, Robin R; Logston, James L; Lucas, Daniel R (Dan); Luchi, John M; Lund, Dennis P; Lutz, Mark T; Maciuca, Constantin; Malhan, Rajiv; Malhan, Rakesh; Marks, Jeff J; Martin, Loren K; Martinen, Edgar W; Mason, Jeni T; Mason, Scott A; Mata, Beth L; Matthews, Richard L; McClendon, William H IV; McElroy, Michael L; McKinney, John E; McLellan, Gregory W; McNeill, Jeff S; Mendoza, Hiram A; Mendoza, Ruben E; Mensinger, Maura F (Miki); Mercado, L C (Chris); Meredith, Raymond K; Merrill, Darren L; Meyer, Kyle L; Miera, Felix R Jr; Milliken, Nancy J; Moore, Thomas L (Jr); Morales, Teodoro P (Ted); Nelson, Eric A; Netolicky, Robert A; Newcomb, Kevin L; Newell, Barbara; Niebuhr, Daniel P (Dan); Nielsen, Randall K; Nuest, Susan L; O'Neal, M L; Owen, Annette; Page, Rosalyn S; Parker, Dan L (Danny); Parnell, William L (Bill); Parsons, Gregory L (Greg); Pattee, David W; Payne, Joseph A; Pedraza, Rene M; Peery, Bruce Q; Penick, Lee R; Penn, Lucinda L; Peoples, C W (Chuck); Perkes, Randall S; Peters, Nanci L; Petty, Loyd J; Pfaff, Stephen H; Powers, Michael J; Praznik, Robert J (Praz); Prilucik, John R; Purdy, Stephen R; Puryear, William E (Bill); Rahm, Terry H; Ramon, Paul; Randles, Jason J; Raven, Rebecca P (Bexa); Reichmuth, Curtis R; Rensink, Gail L; Reynolds, Jennie M; Reynolds, Tammy R; Rieck, Curtis A; Ringo, Steven D; Robbins, Michael D; Roberts, Mark A; Robinson, Darrel D; Rodriquez, Jose S (Joe); Rohner, Janet J; Rolph, James T; Ross, William E (Bill); Roueche, Donald F; Roueche', Kimberly A; Royack, Michael J; Rueter, Kenneth J; Rutland, Paul L; Sainz, Steven C; Sand, Patrick J; Sansotta, Dominic J; Saueressig, David J; Saunders, Scott A; Sax, Scott M; Schaeppi, William; Schaleger, John P; Schmorde, F A (Fred); Schofield, John S; Scott, Carol; Scott, Walter B; Seidel, Cary M; Serna, Victor; Sheehy, Robert; Shelt, Janyce M; Shuford, David H (Dave); Shugars, David L; Simpson, Charles A; Slaugh, Don M; Smith, Keith O (KO); Smith, Kelly; Smith, Kelly M; Smoot, William L; Spears, Cathy S; Spillman, Anthony W; Spohr, Richard A (Rick); Stam, Erik C; Steen, Robin M; Stewart, Jeff A; Stoddard, R E (Rocky); Story, Scott W; Stover, Stephanie; Strasser, David W; Strong, Marian R; Sutey, Michael J; Swaney, Stephen L; Swita, Walter R (Walt); Taber, Teena K; Tackett, Elizabeth; Taylor, Willis H; Tedeschi, Allan R (Rick); Thomas, Anthony R (Tony); Thomas, Brian R; Thompson, Dale A; Thorne, Everend O; Tifft, Sherman R; Tilley, John C; Tipps, Michael C; Tollefson, David J (Dave); Treadway, Phillip L; Tucker, Ronald P; Ulk, Paul F; Upchurch, Craig E; Vacca,

Joseph; Van Morris, Tom; Van Slyke, Janet L; Voogd, Jeffry A; Wagner, V L (Vikki); Wagner, Wade M; Waldo, Eric J; Walker, Lewis M (Lew); Wallgren, Carl B; Washenfelder, Dennis J; Waters, Shaun F; Welch, Carol M; White, Don (WRPS); White, William F (TF Procedures); Wiggins, J D (Dewayne); Wilhelm, Alan J; Williams, B Tim; Wilson, Donald J; Woods, Tom T; Wooley, Theodore A; Wright, Ronald L; Zlatnik, Ruth A

Subject: TOC Revision Notification (MD; BSM; ESHQ; Waiver)

The following procedures have been revised or are new issues. Procedures are published on the "Procedures" group intranet site.

Document: TFC-BSM-CP_CPR-C-06 Rev: G-5
Title: Procurement of Items (Materials)
Summary of Change:

- Clarified in sections 4.1 and 4.2 that signatures are in addition to those already required by the Determination of Required Approvals
- Removed Attachment B and renumbered remaining attachments; this information has been moved to the Procurement website
- Updated web location of QA clauses on the intranet
- Added RPP-PLAN-39433 as a requirement source to section 7.1 and added corresponding requirements flags in the body of the document.

Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/3864340

Document: TFC-BSM-HR_EM-C-02 Rev: D-4
Title: Employment Staffing
Summary of Change:

- Clarified scope of procedure as it relates to recovery act scope of work
- Removed figures
- Corrected names of organizational names/positions
- Updated names of forms and websites used in the process
- Added a description for the internal transfer process.

Effective Date: June 1, 2009
http://idmsweb/idms/livelink.exe/Open/3952476

Document: TFC-BSM-TQ-STD-19 Rev: B-1
Title: Technical Procedure Process Program
Summary of Change: This standard is being canceled. Relevant information has been incorporated into TFC-OPS-OPER-C-13.
Effective Date: June 1, 2009

Document: TFC-ESHQ-Q_ADM-C-01 Rev: B
Title: Graded Quality Assurance
Summary of Change:

- Revised Table 1 to require approved NQA-1 supplier from ESL if not procured as dedicated CGI for safety class SSCs
- Added a note to Table 2 stating that all safety significant SSCs shall be procured as QL 2 regardless of QA level. CGI dedication is required for all safety significant SSCs not procured from an evaluated NQA-1 supplier
- Revised Table 3 with similar note as Table 2
- Revised Table 4 with a similar note as Table 2.

Effective Date: June 1, 2009
http://idmsweb/idms/livelink.exe/Open/3811774

Document: TFC-MD-064 Rev: A-1
Title: NQA-1 Commercial Grade Item Definition
Summary of Change: Extended effective date until July 19, 2009.
Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/142467260

Document: TFC-MD-065 Rev: A-1
Title: Point of Use Control for Safety Significant Items and Materials
Summary of Change: Extended effective date until July 19, 2009
Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/142467268

Document: Waiver #189 Rev: A
Against: TFC-PRJ-PC-C-12, Baseline Change Control
Summary of Change: Waived section 4.3, step 4 that states a rough order of magnitude budget for up to 90 days of scope coverage is needed in the BCR. This waiver applies only to Recovery Act work scope. Complete text of the waiver may be viewed at:
http://idmsweb/idmsprod/livelink.exe?func=ll&objId=143392448&objAction=Open&viewType=1
Effective Date: December 17, 2008

If you require further information, please contact:

Beth Gibson	376-0151
Steve Purdy	373-1700
K.O. Smith	373-0250

From: Gibson, Elizabeth R
Sent: Monday, June 01, 2009 4:25 PM
To: ^Tank Farms Shift Operations; Adams, Edward J; Adams, Wendy L; Ahmer, Douglas W; Alexander, Sandy K; Allen, Clyde P; Allen, Darryl; Allen-Floyd, Julie C; Anderson, Kenneth J; Anderson, Rick A; Andrews, Jeffrey E; Armstead, John M; Atkins, Larry B; Austin, John L; Badden, James J (Jim); Baide, Daniel G (Dan); Baird, Kenneth A; Barger, David L; Barrett, Scott G; Basche, Amy D; Bauer, Roger E; Beaumier, Glenn R; Becker, Terry L; Bennington, Timothy L; Beranek, Fred; Berglund, Owen D; Berry, Larry G; Bevans, Sidney E; Bewick, Joseph A; Bickel, Eric E; Bishop, Daniel J; Blank, Betsy S; Boasen, Robin L; Boger, Robert M (Mike); Boness, Sharon L; Borrowman, Jerry E; Bowman, Tamara; Bradley, Bryon H; Brannan, Patrick B (Brad); Brey, K Kristine; Brey, Stephen L; Brooks, Rocky L; Brosee, Neil; Brown, David W; Brown, Nancy L; Brown, Robert L; Brown, Rodney J; Brule, Wayne G; Bryant, William H; Bunn, Kathie L; Burke, Christopher A; Burrows, Christopher; Burt, David L (Dave); Butler, J D (Dane); Calderon, Linda; Caldwell, Joyce A; Calmus, Ronald B (Ron); Carlile, Dave L; Carpenter, Keith E; Carrothers, Bradley M; Castleberry, Jim L; Cato, Diane M; Chapman, Stephen R; Cleveland, Evan D; Cole, David F; Coleman, George J; Collins, Tami L; Colosi, Kristin A; Conrad, James S (Scott); Cook, Randy W; Cordray, Lana L; Cost, Michael D; Cranston, Mark D; Crockett, David A (Dave); Crockett, James E (Jim); Culbertson, April M; Culver, Patsy D; Cuneo, Joseph R; Dale, Robert N (Rob); Daniels, F T (Tom); Darling, John E; Davis, Glenda M; Davis, Steven A; Davis, Theodore J (Ted); Day, Paul T; Decker, Quinten R; Deffenbaugh, Michael L; DeFord, Douglas K; Del Carlo, Rochelle J; Deleon, Sosten; Denning, Jeffrey L; DePeel, Michael J; Diiorio, Michelle D; Dixon, William T; Donley, Elizabeth A; Doss, Greggory C; Doss, Shelly D; Douglass, Stephen R; Duffy, William L; kdevitt@columbia-energy.com; rkoster@columbia-energy.com; Dunn, Frank M; Dunn, Robert B; Dupaquier, James C (Jim); Eberlein, Susan J; Eppler, Larry L; Erickson, Todd; Esvelt, Chad A; Everett, Brian K; Faust, Gary L; Ficklin, James W (Jim); Field, Jim G; Fish, Michael A; Flasch, Michael P; Flowers, Lon A; Fogg, Robin J; Foley, Richard W (Dick); Forester, Barbara A; Fox, Leann E; French, Raymond P (Ray); Galliher, Alicia K; Garcia, John G; Gardner, Greg A; Garello, Paul R; Garrett, Mark S; Gay, Douglas C; Gaydosh, William L; Geary, James E (Jim); Gerken, Mark D; Gilles, David A (Dave); Glaman, Linda; Goetz, Thomas G (Tom); Graham, Roy D (Pete); Graves, Greg P; Gray, Everett W Jr; Gray, Keith W; Greenough, Keith J Jr; Greenwell, Doug; Gregory, Robert E (Rob); Grigsby, J M (Mike); Guberski, John D; Gunderson, Dennis; Gustafson, Kevin A; Gutierrez, Richard V; Haan, Thomas P; Hall, K M (Kathleen) - CHG; Hamilton, Dennis W; Hamilton, Peggy; Hamm, Earnest R; Hampton, Clifford E; Hanford, Troy L; Hanni, Jonathan B; Hanson, Carl E; Hanson, Gregory N; Haq, Mian A; Harding, Ronald A; Hardy, Don B; Harris, John P III; Harris, Tammy C; Harrison, W D (Dale); Hartley, Danny C (Dan); Haskins, W B (Byrne); Hathaway, S L (Steve); Hay, James M (Mike); Hebert, Larry J; Heinemann, Jay L; Hendrickson, Alice R; Herndon, Van T; Heubach, Edward C II (Ed); Hickman, Bob T; Higbee, Kirk R; Higham, Dale B; Hinds, Andrea R; Hjellum, Allan D (Al); Hobbs, John R; Holbrook, Arlo R; Holloway, Jerry N; Homan, Dennis L; Hopkins, Gary P; Horner, Randell L (Randy); Houf, Mary J; Howard, Perry M (Pat); Howell,

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Subject: TOC Revision Notification (MD; BSM; ESHQ; Waiver)

The following procedures have been revised or are new issues. Procedures are published on the "Procedures" group intranet site.

Document: TFC-BSM-CP_CPR-C-06 Rev: G-5
Title: Procurement of Items (Materials)
Summary of Change:

- Clarified in sections 4.1 and 4.2 that signatures are in addition to those already required by the Determination of Required Approvals
- Removed Attachment B and renumbered remaining attachments; this information has been moved to the Procurement website
- Updated web location of QA clauses on the intranet
- Added RPP-PLAN-39433 as a requirement source to section 7.1 and added corresponding requirements flags in the body of the document.

Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/3864340

Document: TFC-BSM-HR_EM-C-02 Rev: D-4
Title: Employment Staffing
Summary of Change:

- Clarified scope of procedure as it relates to recovery act scope of work
- Removed figures
- Corrected names of organizational names/positions
- Updated names of forms and websites used in the process
- Added a description for the internal transfer process.

Effective Date: June 1, 2009
http://idmsweb/idms/livelink.exe/Open/3952476

Document: TFC-BSM-TQ-STD-19 Rev: B-1
Title: Technical Procedure Process Program
Summary of Change: This standard is being canceled. Relevant information has been incorporated into TFC-OPS-OPER-C-13.
Effective Date: June 1, 2009

Document: TFC-ESHQ-Q_ADM-C-01 Rev: B
Title: Graded Quality Assurance
Summary of Change:

- Revised Table 1 to require approved NQA-1 supplier from ESL if not procured as dedicated CGI for safety class SSCs
- Added a note to Table 2 stating that all safety significant SSCs shall be procured as QL 2 regardless of QA level. CGI dedication is required for all safety significant SSCs not procured from an evaluated NQA-1 supplier
- Revised Table 3 with similar note as Table 2
- Revised Table 4 with a similar note as Table 2.

Effective Date: June 1, 2009
http://idmsweb/idms/livelink.exe/Open/3811774

Document: TFC-MD-064 Rev: A-1
Title: NQA-1 Commercial Grade Item Definition
Summary of Change: Extended effective date until July 19, 2009.
Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/142467260

Document: TFC-MD-065 Rev: A-1
Title: Point of Use Control for Safety Significant Items and Materials
Summary of Change: Extended effective date until July 19, 2009
Effective Date: June 1, 2009
http://idmsweb/idmsprod/livelink.exe/Open/142467268

Document: Waiver #189 Rev: A
Against: TFC-PRJ-PC-C-12, Baseline Change Control
Summary of Change: Waived section 4.3, step 4 that states a rough order of magnitude budget for up to 90 days of scope coverage is needed in the BCR. This waiver applies only to Recovery Act work scope. Complete text of the waiver may be viewed at:
http://idmsweb/idmsprod/livelink.exe?func=ll&objId=143392448&objAction=Open&viewType=1
Effective Date: December 17, 2008

If you require further information, please contact:

Beth Gibson 376-0151
Steve Purdy 373-1700
K.O. Smith 373-0250

From: Faust, Gary L
Sent: Thursday, May 28, 2009 8:56 AM
To: Janecke, J R (Rick)
Subject: RE: POI revision

Rick,

The final draft revision of TFC-BSM-CP_CPR-C-06, Procurement of Items, noted below, incorporates the changes made in TFC-MD-62, and is acceptable to close the SIG PER-2008-0279 corrective action WRPS-PER-2008-0279.5 when it is issued.

Thanks,

Gary Faust

From: Janecke, J R (Rick)
Sent: Wednesday, May 27, 2009 1:24 PM
To: Faust, Gary L
Subject: RE: POI revision

Gary,

When you get the opportunity, if you could send me an email that POI as revised answers the mail, I would appreciate it. It would be my plan to use the email and notice of publication to close the PER.

Thanks,
Rick

From: Faust, Gary L
Sent: Wednesday, May 27, 2009 1:22 PM
To: Janecke, J R (Rick)
Subject: RE: POI revision

Rick,

OK.

Thanks,

Gary

From: Janecke, J R (Rick)
Sent: Wednesday, May 27, 2009 12:01 PM
To: Faust, Gary L
Subject: RE: POI revision

Gary,

Additional change is incorporated.

Thanks,
Rick

From: Faust, Gary L
Sent: Wednesday, May 27, 2009 11:28 AM
To: Janecke, J R (Rick)
Subject: FW: POI revision

Rick,

One additional change needed in Section 4.1, Item 4, Note. See attached Yellow highlight on page 7.

Thanks,

Gary Faust

From: Janecke, J R (Rick)
Sent: Wednesday, May 27, 2009 10:50 AM
To: Faust, Gary L
Subject: POI revision

Gary,

Here is the revision with your comments incorporated. Please let me know if this is sufficient to close out my action with the issuing of the revision.

Thanks for catching that I hadn't incorporated your comments/required changes.

Now I know why I had all the delays and couldn't seem to get it through the process. As I indicated I thought I was done with it two weeks ago.

I am still trying to figure out how I missed incorporation of your comments.

Again, thanks for being diligent and preventing a failure.

Rick

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Subject: POI revision

Gary,

Here is the revision with your comments incorporated. Please let me know if this is sufficient to close out my action with the issuing of the revision.

Thanks for catching that I hadn't incorporated your comments/required changes.

Now I know why I had all the delays and couldn't seem to get it through the process. As I indicated I thought I was done with it two weeks ago.

I am still trying to figure out how I missed incorporation of your comments.

Again, thanks for being diligent and preventing a failure.

Rick

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.6)

1.1 Purpose

This procedure defines the process for procuring quality level (Section 4.2) materials or items utilizing a Bill of Material (BOM) or a Material Requisition (MR) (see Section 4.1). Use of a Master BOM is also defined in Section 4.3. This process is available via the electronic Tank Farm Material Services System (TFMSS) or PassPort system and is used for the procurement/acquisition of engineered equipment, materials for construction activities, corrective and preventive maintenance materials, fabricated parts or components, permanent material installations, and direct materials (future field installations, tool crib supplies/stock, hand tools, shop stock, operations supplies, and maintenance supplies) for WRPS.

Refer to TFC-ESHQ-Q_ADM-C-01 for the graded application of TFC-PLN-02 requirements to WRPS items. The graded application of the Quality Assurance Program Description (QAPD) depends on the risk associated with the item under consideration.

1.2 Scope

This procedure defines the process for procuring items/materials including permanent material installations/engineered equipment/fabricated parts for construction activities, corrective and preventive maintenance materials, and direct work package materials.

This procedure does not define the process for procurement of the following:

- Quality Level 0 and 3 general use or field consumable materials which can be purchased via a P-Card. Refer to TFC-BSM-CP_CPR-C-01.

- Spare Parts; refer to TFC-BSM-CP_CPR-C-19 for guidance.

If a specification or catalogue ID has not been developed with sufficient detail and it is impractical to do so for one-of-a-kind engineered equipment, it can be procured using TFC-BSM-CP_CPR-C-05.

Refer to TFC-BSM-CP_CPR-C-09 for a detailed Supply Chain description.

Refer to TFC-BSM-CP_CPR-C-05 for Procurement of Services and buyer's technical representative responsibilities.

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

4.1 Develop a Bill of Materials or Material Requisition
(7.1.5.a, 7.1.5.b)

You must check each item on Attachment A "Determining Supporting Documentation" to identify documents and information that should be provided with or attached electronically to the BOM/MR.

NOTE: The following sections refer to the use of the TFMSS electronic system for development of a BOM/MR. Only under specific circumstances, when the need to procure material has been identified and TFMSS is not accessible (off-shift, weekends, or holidays, system is down), can a paper BOM/MR be used and then processed through a material coordinator.

NOTE: A BOM is used to procure items/materials including permanent material installations/engineered equipment/fabricated parts, construction activities, corrective and preventive maintenance materials, and direct work package materials.

NOTE: An MR is used when items/material are required for future field installations, tool crib supplies/stock, hand tools, shop stock, operations supplies, and maintenance supplies, as well as to track eligibility requirements for winter clothing, safety eyewear and safety shoes.

NOTE: A Field BOM may be used if GS-QL 0 material is readily available on site. The planner, with concurrence from the Manager, can develop the Field BOM and document it on the work record. Refer to TFC-BSM-CP_CPR-C-18, Section 4.2.1, for use of the Field BOM.

NOTE: Refer to Determination of Required Approvals - Items for guidance on required approvals.

Planner/Requester

1. For Work Package BOM items and materials, open TFMSS and click on the Master BOM section and review the pre-approved Master Bill of Materials list to determine if a Master BOM exists for the items being requested. (See Section 5.0 for the definition of Master Bill of Material.)

   a. If the need can be met with an existing Master BOM, proceed to Section 4.4.

   b. If the need cannot be met with an existing Master BOM, but one should be established, proceed to Section 4.3.

   c. If the need cannot be met through a Master BOM, proceed to step 2.

   NOTE: See Section 4.3 Development of a Master BOM, for description, application, and use of a Master BOM for frequently purchased spares/parts that eliminates the need to secure repeat approvals of BOMs for frequently purchased items.

NOTE: A Master BOM can be set up to document a request for spare parts withdrawn via PassPort. A simple cloned BOM triggers generation of the PassPort MR.

2. Prepare an electronic BOM/MR (as applicable) using TFMSS by clicking on BOM or MR in the "Must Select BOM or MR" box.

   NOTE: The quantity section of the BOM identifies the actual quantity of items/material to be installed. If additional items/materials are required for future installations, the additional items/materials should be identified on a separate MR and submitted to Materials. The MR should be submitted at the same time as the BOM to avoid duplicate requests being generated.

   NOTE: Include all applicable documentation per Attachment A.

   NOTE: For QL- 0/3 procured items, if the item was originally purchased on a MR with applicable approvals per Determination of Required Approvals - Items and there are no changes to the original MR catalog ID; the BOM generated to issue the item to a field work package only requires the requestor and a manager approval. Additional approvals can be acquired if manager deems they are appropriate to mitigate risk.

3. At a minimum, the following blocks should be completed (if applicable):

   - Premium Transportation – Check if overnight shipping is required.

     NOTE: If premium freight is required, a justification must be provided in the Special Instruction box and, it must be authorized by one of the following: CAM or manager.

   - Work Package Number (for BOM only).

   - CACN/COA – click on the icon and enter. (Note who is associated CAM for subsequent approval).

   - Delivery Area/location – Enter area/location and person.

   - End Use

     NOTE: Regarding BOMs, the End-Use is the Equipment Identification Number (EIN), the facility location and tank or building number, as applicable. The work package identifies the specifics regarding the work scope and detailed location.

     NOTE: Regarding MRs the "End-Use" is use of the item being ordered such as tool crib supplies, hand tools, operations supplies, maintenance supplies, etc.

- CGI – Indicate if the item is to be CGI dedicated
- Org Code – Enter five digit org code
- Priority - Enter per Attachment A of TFC-OPS-MAINT-C-01
- Suggested Vendor
- Date Required – Click on the drop down icon and indicate the date required and if it is a desired date or mandatory date
- Approvers (see step 5 below for guidance)
- Special Instructions/Emergency Justification – enter any special instruction or emergency justification if premium freight is checked
- Quantity – Enter quantity needed
- Unit – Enter unit of issue
- Quality Level (QL)
- Use a Q asterisk (Q*) in each Approval Designator block for items identified as potentially being suspect/counterfeit item.

  1) The block identified on the BOM/MR as "Special Instructions" must have the following statement:

     "Items _____, _____, and _____ to be inspected for S/CI."

- SC
- Storage Level (SL)
- Drawing/ECN/Spec# - Enter numbers if appropriate
- HAZMAT - Check if the items are hazardous (7.1.1)
- Material Safety Data Sheet (MSDS) - Check if item requires MSDS
- NRTL – Check if applicable
- Material Description

  NOTE: Descriptive information, including the salient features, characteristics and dimensions suitable for competitive

procurement and to uniquely identify this item from other similar items. When providing the description use PassPort Standard Abbreviation List. If an item contains precious metals, the type and amount must be indicated in the description. If the precious metals are greater than 1 gram, or the value is greater than or equal to $250.00, contact property management.

NOTE: For fabricated equipment, ensure the description reflects the information from the Fabrication Request (form A-6003-967 if Parsons is to do the work), as applicable.

Guidelines are:

- Separate key words with commas
- Order critical attributes according to size, material, type, rating, and color

NOTE: Place part numbers, model numbers, manufacturer name, ECN numbers, DWG numbers, etc., in the specific fields for this information.

- Additional Description (AD)
- Manufacturer – Enter the manufacturer of the item.
- Facility – Defaults to TF
- Part number or model number
- Equipment – Enter the category of the item

  NOTE: If the equipment to be leased is a trailer or similar type facility/structure, complete Site Evaluation Form (A-6001-152) and obtain approval of the Site Planning Board before proceeding.

- Estimated unit cost – Enter estimated cost per unit
- Cat/P-Card/Fab ID – Click to find an existing catalogue or P-Card item
- Comments – Enter any relevant comments.

4. If the approval designator, quality assurance level (QAL), safety class (SC), and storage level of the item are known, specify it on the electronic BOM/MR; if it is not known, obtain Engineering support to determine applicable quality levels.

   NOTE: WRPS Quality and the correlating PassPort Quality Level Codes are listed below (refer to TFC-ENG-DESIGN-P-28 and TFC-ESHQ-Q_ADM-C-01):

WRPS Quality Assurance Level	TFMSS Quality Level	Safety Code *
Commercial	QL-0	General Service
Enhanced	QL-3	General Service
Full	QL-1 or QL-2 **	General Service Safety Significant Safety Class

   *Safety Code is equal to that assigned to the system that the component is to be installed into.

   Items designated Full Quality can be procured either as QL-1 or QL-2 – the end results are identical – either the supplier is an evaluated supplier or the item goes through a commercial grade item dedication process. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.

   Formatted: Not Highlight

5. Assign a responsible manager and engineer (for QL 1, 2, and 3 items) in the applicable blocks by using the blue down arrow, highlighting, and clicking on the name of the appropriate manager or engineer.

6. Contact the WRPS Hoisting and Rigging Committee and Rigging Engineer to assign an appropriate Equipment Custodian if procurement of this item will involve hoisting and rigging materials. Contact with the Equipment Custodian is required to allow sufficient time to coordinate all activities required to receive the item.

7. Save the BOM/MR, and if prompted, click ok to save the BOM/MR.

8. Open the BOM/MR under the working tab and forward the request to the Responsible Manager and Engineer for further processing.

   a. To accomplish this, use the blue down arrow next to the "B.O.M. Status block," highlight and click manager or Engineer as applicable.

   b. If prompted, click ok to move the BOM/MR forward.

Responsible Manager

9. Review and approve or return the BOM/MR.

   NOTE: Some BOMs do not require manager approval.

10. Ensure that information or specifications divulged to prospective bidders can be released to the public and do not include Sensitive Unclassified Information (SUI). Refer to TFC-BSM-IRM_DC-C-03 for additional guidance on information clearance requirements and to TFC-BSM-IRM-STD-03 for identification guidance.

Responsible Engineer

11. Review the BOM/MR and, as necessary, add applicable requirements to ensure that the material description and procurement requirements, defined in a graded approach, are correct for the end use.

    Include the following items as appropriate:

    - The intended use of the item or service.
    - The requirement for the supplier to impose appropriate technical and quality assurance program requirements, including inspection criteria, on sub-tier suppliers through their procurement documents.
    - Documentation required to be submitted by the supplier for information, review, or approval by the purchaser. Where relevant a schedule should be provided.
    - The requirement for purchaser (or designated representative) right-of-access to the supplier's facilities and records for inspections, assessments, and audits related to the procurement
    - Provisions for establishing any needed hold points beyond which work cannot proceed without purchaser authorization
    - Identification of equipment lifting requirements including design of lift points, design verification, and any special lifting apparatus
    - Identification of appropriate spare and replacement parts or assemblies and the appropriate delineation of the technical and quality assurance related data required for ordering these parts or assemblies

      NOTE: Evaluate the potential need for spare equipment that could fail prematurely, especially long lead delivery or items not readily available from the vendor. Obtain a list of recommended spares with estimated delivery lead times to enable a technical evaluation of critical spares depending on cost, schedule, and project risk. The engineer is responsible for obtaining and documenting recommended spares and evaluation performed.

- Shelf life requirements.

  NOTE: Determine from the vendor if any items or components within equipment assemblies (e.g., "O" rings, drives belts) are subject to shelf life limitations. Establish the shelf life expressed in months or years. Distinguish between "storage only" shelf life and "in service field use" shelf life, if there is a difference. Shelf life information and storage conditions for items designated "Full Quality" shall be documented in the material description block.

- Identification of the information required from the vendor, if any, including operating manuals, maintenance manuals, one-line diagrams, and drawings. Ensure the required vendor information and number of copies of each item needed is described.

12. Ensure the Quality attributes for items/materials being procured is correct.

    a. Consult the Work Management System (WMS) Asset/Equipment database, or

    b. Ensure the appropriate Quality attributes have been applied for the items/materials being procured, in accordance with RPP-RPT-29160 and the applicable Commercial Grade Item Upgrade Dedication form (A-6002-544) (for Safety Significant Systems) and/or TFC-ESHQ-Q_ADM-C-01, as applicable.

    c. Record Quality in WMS Asset/Equipment Database in accordance with TFC-ENG-FACSUP-C-23, if the item is identified with an Equipment Identification Number (EIN).

       - AD: Enter approval designator
       - SC: Enter safety class
       - SL: Enter storage level.

13. Specify technical requirements by reference to specific drawings, specifications, codes, standards, regulations, procedures, or instructions, including revisions thereto, that describe the items or services to be furnished.

    NOTE 1: National codes, standards, and WRPS standards may be needed for reference as requirements. Refer to TFC-ENG-DESIGN-D-13.2 for guidance.

    NOTE 2: If technical information is to be provided to the potential supplier, a determination must be made if the information meets Export Controlled Information (ECI) requirements. ECI distribution must be restricted to prevent unauthorized release to foreign countries, organizations, or foreign nationals. Recipients of ECI are required to complete and sign an ECI Non-Disclosure form. Refer to TFC-BSM-IRM-STD-03 for guidance.

14. Coordinate with Materials to determine if the item/material may already be available on site.

    a. If the item/material is available, proceed to step 17 and evaluate commercial grade upgrade dedication requirements.

    b. If the item/material is **not** available, proceed next step.

15. Determine appropriate QA Clauses for each line item if any of the items/materials being procured are QL 1, 2, or 3.

    a. Consult the WMS Asset/Equipment database or

    b. Identify appropriate QA Clauses in accordance with the Procurement Quality Clause listing on the Hanford Internet (http://www5.rl.gov/rapidweb/procweb/index.cfm?PageNum=26)

    c. Record QA Clauses in WMS Asset/Equipment database as attachments.

        1) Ensure material requirements are specified to preclude the purchase or introduction of a suspect/counterfeit item (S/CI). Refer to TFC-ESHQ-Q_C-C-03 for guidance.

        2) Determine testing and inspection requirements with associated acceptance criteria, utilizing the approved test plan developed for the project (if applicable).

16. Ensure that all QL-0, 1, 2, or 3 electrical equipment procured or designed to be installed within or on WRPS managed facilities or projects shall comply with NFPA 70, TFC-ESHQ-S-STD-03, and TFC-ESHQ-S_SAF-C-09.

17. Assign appropriate storage level on BOM/MR in accordance with TFC-BSM-CP_CPR-C-18 to maintain the integrity of the stored items for future tank farm installations.

    NOTE: Assignment of storage level is required for all items procured and/or placed in inventory for later installation in tank farms structures, systems, and components.

    a. Identify any protective measures or cleanliness requirements required to maintain the quality of stored materials, including the use of containers, contact preservatives, valve opening covers, and vapor barriers with desiccants.

    b. Identify any preventive maintenance requirements that must be performed on stored equipment.

18. Identify test and inspection requirements with associated acceptance criteria utilizing the approved test plan developed for the project if applicable.

19. If the item is designated as Enhanced Quality (QL-3) or Full Quality (QL-1 or 2), develop a QA Inspection Plan (QAIP), with assistance from Quality Assurance, defining inspection/verification requirements and acceptance criteria. For fabricated equipment, the QAIP must reflect the inspection and green-tagging requirements from the Fabrication Request, as applicable.

    NOTE: Identify the type of inspection (such as source inspection, receipt inspection, etc.) when using the TFMSS electronic QAIP.

Field Code Changed

Field Code Changed

Field Code Changed

20. Determine if the items/materials require commercial grade dedication for use in safety application. Refer to Section 4.5 for guidance.

    a. For each item requiring commercial grade item dedication, use a Q asterisk (Q*) in each Approval Designator block.

    b. Ensure the block identified on the BOM as "Special Instructions" have the following statement for items to be accepted by the commercial grade item dedication process:

       "Items _____, _____, and _____ to be dedicated per CGI # _____"

21. Approve BOM/MR and refer to Determination of Required Approvals - Items to determine the additional appropriate approvals for the Route List.

    a. To populate the Route List, click the blue down arrow and highlight the applicable organization, individual or title, as appropriate.

    b. Approve the BOM by using the "B.O.M. Status block." If prompted, click ok to move the BOM forward. Proceed to next step.

Quality Assurance

22. Ensure that appropriate safety classification and quality requirements are included in procurement documents, including provisions that ensure proper quality assurance program controls are applied to all sub-tier suppliers and contractors.

23. If any discrepancies are identified in this step, or steps 22 and 23, return the BOM/MR to the responsible engineer or requester for resolution. Following resolution of any issue(s) and re-approval by engineering, proceed with review and approval of the BOM/MR, as appropriate.

24. Verify that the correct QA clauses have been designated for each item on the BOM/MR requiring receipt inspection.

25. Ensure that appropriate acceptance criteria, including inspections or other verifications, are properly applied in procurement documents and the QAIP, as required.

26. For Full Quality (QL 1 or 2) or Enhanced Quality (QL 3) items, assist Engineering in developing a QAIP, for critical attributes that require inspection. Include the applicable inspection requirements and any other verification requirements.

27. Approve the BOM/MR as required by Determination of Required Approvals - Items. Use the blue down arrow next to the "BOM/MR Status block" and highlight and click MCM. If prompted, click "ok" to move the BOM/MR forward.

Materials

28. Review the BOM/MR for completeness.

    NOTE: If materials are on the S/CI list ensure that a Q asterisk (Q*) is included on the BOM/MR. For items/materials that are Quality Level 3 and above the B-76 clause should be used.

    a. If significant changes are requested or necessary, provide the following information when returning the BOM/MR to the requestor/engineering:

        1) Indicate what needs to be changed, why, and who requested the change.

        2) Notify the requester, engineer, and QAE (at a minimum) of the same information (include BOM/MR number) via e-mail message.

        Examples of significant changes would be:

        - Safety class change
        - Quality level change
        - QAIP change
        - QA clause change
        - Changing a valid part number to another valid part number
        - Drawing/ECN/specification changes.

b. If incidental changes are requested or necessary, provide the following information when returning the BOM/MR to the requestor/engineering:

1) Indicate needs to be changed, why, and who requested the change in the Returned section of the BOM/MR.

2) Notify the requester and the engineer (at a minimum) of the same information (include BOM/MR number) via e-mail message.

Examples of incidental changes would be:

- Spelling errors
- Quantity changes
- Typographical errors in the part number, but not changing a valid part number to another valid part number
- Typographical errors in the description
- Storage level
- An obsolete part number being changed to the current part number.

29. Determine if the item/material is currently available/on hand by checking the TFMSS search tool inventory which includes PassPort, TFMSS, Central Stores, and 2101-HV. Access database material.

NOTE: Quality 1, 2, and 3 materials that are on hand can be downgraded and utilized to fill Quality – 0 orders by adding a note to BOM/MR indicating "Item was issued as non-quality level and all markings and tags have been removed."

a. If the item/material is available on site, identify the location and obtain from the identified location in accordance with TFC-BSM-CP_CPR-C-18 or TFC-BSM-CP_CPR-C-19.

b. If the required material is available from the general supplies inventory, identify location on the TFMSS BOM/MR.

c. If the required material is **not** available from the general supplies inventory but is a Commercial Quality (QL 0) procurement, proceed to step 33 to determine if material can be procured using a P-Card.

d. If the item/material is **not** available in inventory, proceed to step e.

e. Review the link below for excess property available from other complex-wide government agencies or prime contractors.

- GSAXcess® (http://www.gsaxcess.gov.)

f. To gain access to GSAXcess® to search for available property, complete the GSAXcess Form, Attachment B, and transmit to the Manager, Procurement Services, for approval. Once approval is obtained, you may register online at the login page, http://www.gsaxcess.gov. Once access to the GSAXcess ®site has been obtained, request the Activity Address Code (AAC) from the Manager of Procurement Services.

g. Consider the following when acquiring excess property:

- There must be an authorized requirement.
- The cost of acquiring and maintaining the excess personal property (including packing, shipping, pickup, and necessary repairs) does not exceed the cost of purchasing and maintaining new material.
- The sources of spare parts or repair/maintenance services to support the acquired item are readily accessible.
- The supply of excess parts acquired must not exceed the life expectancy of the equipment supported.
- The excess personal property will fulfill the required need with reasonable certainty without sacrificing mission or schedule.
- You must not acquire excess personal property with the intent to sell or trade for other assets.

1) If desired item/materials/property is located within the GSAXcess web site, proceed through the process provided on the web site of selecting and requesting said item, and generating the Transfer Control Number. Identify the location on the TFMSS BOM/MR.

2) If the material is **not** available from any of the above sources, proceed to next step.

30. Determine if the item is to be leased from the vendor rather than purchased.

    a. If the item is to be leased from the vendor, prepare an itemized list of the equipment. Continue with next step.

       NOTE: Prior to leasing (or renting) equipment, contact Facilities & Property Management to ascertain whether the equipment is already available internally or whether it is available from another government/prime contract source. (Refer to TFC-BSM-FPM_PR-C-01 for tagging guidance.)

    b. If the item is to be purchased rather than leased, proceed to step 34.

31. Submit the itemized equipment list to the Procurement Specialist.

Procurement Specialist

32. Review the equipment list.

    a. If acceptable, complete an Equipment Bailment Agreement form (A-6003-477) and include the equipment list as an attachment to the Equipment Bailment Agreement. Proceed to next step.

       NOTE: The Equipment Bailment Agreement applies only to loaned or leased equipment. Only the procurement specialist is authorized to obtain a vendor signature on an Equipment Bailment Agreement.

    b. If not acceptable, the loan/lease cannot be made. Contact the requester and Materials for direction.

33. Notify Materials that the item in question may be obtained through the above process.

Materials

34. Determine if procurement can be accomplished via a P-Card using TFC-BSM-CP_CPR-C-01, including Attachment A, WRPS P-Card Prohibited Items List.

    a. If the item can be purchased with a P-Card, exit this procedure and make required purchase in accordance with TFC-BSM-CP_CPR-C-01. Refer to e-Store Marketplace website for a complete list of commodities that can be purchased via on-line ordering. Purchase is complete.

    b. Document the P-Card log number on the TFMSS Electronic BOM.

       NOTE: When material is received in the field, refer to TFC-BSM-CP_CPR-C-18 for direction.

c. If the item **cannot** be purchased with a P-Card, proceed to next step.

35. If item(s) being procured are Full Quality (QL 1 or 2) or Enhanced Quality (QL 3), verify that a QAIP has been provided; if a QAIP has not been provided, return the BOM/MR to the responsible engineer for further direction.

36. Obtain estimated cost of the items (material) identified.

37. Forward the TFMSS Electronic BOM/MR to be signed if additional approvals are required.

38. As applicable, generate a Material Request (MR) in PassPort (refer to PassPort System User's Guide Portal/J, PassPort 9 Training).

    a. Include the following statement in the MR: "The offering of the item is evidence of the supplier's verification that all procurement requirements have been satisfied."

    b. Enter the CGI dedication number, if applicable, in the PassPort Notes area.

39. Electronically attach the authorizing procurement documents (TFMSS Electronic BOM/MR): (7.1.3)

    NOTE: Ensure any special instructions and/or emergency justification identified in the TFMSS BOM/MR are incorporated and/or linked in the purchase requisition(s), as applicable.

    a. Click report tab in TFMSS.

    b. Click BOM/MR; BOM/MR is located on green bar in white letters under tabs.

    c. Enter Work Package and click search.

    d. Click and open BOM/MR.

    e. Click Address bar to highlight.

    f. Right click.

    g. Highlight and click copy.

    h. Open the PassPort word document and paste link in desired location.

    i. Highlight the pasted address and right click.

j. Click and select Hyperlink.

NOTE: The insert Hyperlink page must show the address on bottom and top of page to connect the link. If the addresses match and are present click ok. If the addresses are blank or incorrect, paste in address and click ok.

40. Submit the PassPort MR and obtain the approval of the Materials Manager via PassPort if dollar value is greater than your PassPort approval authority.

41. Verify by independent review that the information entered into PassPort MR is consistent with BOM/MR request source document.

42. Ensure procurement documentation and files are maintained to support WRPS requirements.

43. Monitor the MR via PassPort

    a. If approved, proceed to Section 4.3 "Acquire Item."

4.2 Acquire QL 1-3 Items
(7.1.5.b)

Procurement Specialist

1. Receive notification in PassPort to process the Purchase Requisition.

2. Ensure that Quality Assurance clauses and other QA requirements, as specified in the purchase requisition, are included in the Purchase Order.

3. Develop a solicitation in accordance with TFC-BSM-CP_CPR-P-02.

4. Make the selection and award in accordance with TFC-BSM-CP_CPR-P-03.

   NOTE: For procurement of items designated as Full Quality (QL 1 or 2) items, ensure that the proposed vendor/supplier is on the Evaluated Supplier List (ESL) for the appropriate criteria, unless the item can be procured commercial grade as determined by Engineering (indicated on catalog ID).

   NOTE: The process for evaluation of suppliers being considered for inclusion on the Fluor Hanford ESL is defined in HNF-PRO-3144, "Supplier Quality Assurance Program Evaluation."

   a. If the proposed supplier is **not** on the ESL, inform Engineering and the Quality Assurance Engineer, and request further direction, i.e., evaluate vendor/supplier for inclusion on the ESL (refer to TFC-ESHQ-Q_ADM-C-09) or for a change in requirements.

b. Acquire Acquisition Verification Services (AVS) approval of Full Quality (QL 1 and/or 2) items that are not upgraded in accordance with the commercial grade item upgrade dedication process.

c. If AVS approval is not required or the item(s) is upgraded in accordance with the commercial grade item upgrade dedication process, proceed to the next step.

5. Document Price Reasonableness for orders greater than $3,000.

6. If progress payments or restocking charges are required after an award is in place, initiate an "administrative" MR to add a line item to the Purchase Requisition to allow for this type of payment/charges.

   NOTE: An administrative MR such as this would not require formal reviews/approvals as identified in the Determination of Required Approvals - Items.

7. Receipt of items is conducted in accordance with TFC-BSM-CP_CPR-C-18.

Quality Control

8. Upon receipt of a Non-Conformance Report (NCR) or supplier generated corrective action report on a quality level 1 or 2 procurement generate a PER to initiate screening for PAAA applicability.

4.3 Development of a Master Bill of Materials (BOM)
(7.1.5.b)

The following sections refer to the use of TFMSS for development of a Master BOM with specific Catalog ID attributes. A Master BOM may be used for ordering frequently used spares parts or items (e.g., AMS-3, AMS-4 CAM parts). The benefit of the Master BOM is to get the required approvals on the Master BOM for all the needed parts once and then generate cloned BOMs tied back to the Master BOM without requiring repeated Technical review and approvals. The cloned BOM requires only the requestor's approval and is automatically submitted to Materials for assignment and processing.

NOTE: To set up frequently used parts as formal spares, refer to TFC-BSM-CP_CPR-C-19.

NOTE: A Master BOM Catalog ID cannot be altered when utilized. If alteration is required a new Master BOM must be created.

Planner/Requester

1. Open the Master BOMs section of TFMSS to review the pre-approved Master Bill of Materials list to determine if a Master BOM exists for the items being requested. (See Section 5.0 for the definition of a Master Bill of Materials.)

   a. If a Master BOM already exists, go to Section 4.4 to clone a Master BOM.

b. If a Master BOM does not exist, create a Master electronic Bill of Materials using the TFMSS electronic BOM per the following steps.

2. Open TFMSS and click on BOM in the must select BOM or MR box.

3. Leave action as "New" and check the box "Master BOM."

4. Complete the Master BOM exactly as a standard BOM (refer to Section 4.2), with the following exceptions:

   a. Place the following note in the special instructions/emergency justification field. This statement is necessary to be carried through to the cloned BOM to record the approvals. (See Section 5.0 for the definition of a cloned BOM.)

      NOTE: As defined in TFC-BSM-CP_CPR-C-06, the Engineering and Quality Assurance approvals for this Bill of Material are located in Master BOM number xxxxxx and are not required to be obtained for each BOM created under the aforementioned Master BOM.

   b. Leave the quantities for each item on the Master BOM set to zero. This is important for the cloned BOM to be able to automatically delete the line items that will be left at zero when saving the cloned BOM.

      NOTE: Contact your material coordinator when setting up a Master BOM to make sure the correct Catalog ID's/TFMSS part numbers and storage locations are identified. This is very important to maintain part availability.

5. Route the Master BOM for review and approval in accordance with Determination of Required Approvals - Items.

Responsible Engineer

6. Review the Master BOM and, as necessary, add applicable requirements to ensure that the material description and procurement requirements, defined in a graded approach, are correct for the end use. (Refer to Section 4.2 under Responsible Engineer for further guidance.)

Quality Assurance

7. Review the Master BOM and ensure that appropriate safety classification and quality requirements are included in procurement documents, including provisions that ensure proper quality assurance program controls are applied to all sub-tier suppliers and contractors. (Refer to Section 4.2 under Quality Assurance for further guidance.) Upon completion of review and concurrence, approve the Master BOM.

   NOTE: If any discrepancies are identified, return the BOM to the Responsible Engineer or Requester for resolution.

8. Upon completion of review and concurrence, approve the Master BOM. The Master BOM is now ready for use to create a cloned BOM.

4.4 Cloning a Master BOM
(7.1.5.b)

Planner/Requester

1. Open the Master BOM section in TFMSS and select the Master BOM to be cloned and open it. Click on the down arrow next to action (in the upper left hand corner) and select clone. A response required dialog box will open asking if you wish to create a clone of the Master BOM, click yes.

   NOTE: Once the Master BOM is cloned, all of the information from the Master will be carried forward to the clone.

2. On the Clone, input the work package number and verify that the rest of the header information is correct and/or filled out.

   NOTE: **Do not** change the statement in the Special Instructions/ Emergency Justification box.

3. Input the quantity for the line items that need to be ordered.

   NOTE: Line items in which the quantity is left zero will automatically delete once the cloned BOM is saved.

4. Approve the cloned BOM and route to Materials for assignment and processing.

Materials

5. Determine if the item/material is currently available on site by checking the PassPort spare parts inventory.

   a. If the item/material is available on site, identify the location and obtain from the WRPS warehouse(s) in accordance with TFC-BSM-CP_CPR-C-18 or TFC-BSM-CP_CPR-C-19.

   b. If the item/material is **not** available in inventory, proceed to step 6.

6. Obtain estimated cost of the items (material) identified.

7. Generate a Material Request (MR) in PassPort and include the following statement in the MR: "The offering of the item is evidence of the supplier's verification that all procurement requirements have been satisfied."

8. Obtain approvals from CAM (if over $10K) and Materials Manager and route to Procurement Construction and Materials Lead for purchasing. Premium freight requires the approval of one of the following: CAM or manager.

9. Verify by independent review that the information entered into PassPort MR is consistent with BOM/MR request source document.

10. Proceed to Section 4.3.

4.5 Commercial Grade Items

Responsible Engineer

1. **For Safety Significant SSCs with a QAL designation of Full Quality, Enhanced Quality, or Commercial Quality not procured from an evaluated supplier**, it shall be demonstrated as suitable for use in its intended application. In accordance with TFC-PLN-03, this requires a documented engineering evaluation to establish and verify critical characteristics before the item is relied on for operation. Critical design characteristics and appropriateness of the item for use shall be verified (e.g., inspection, testing). Refer to TFC-ENG-DESIGN-C-15 for the commercial grade item dedication process.

2. If "existing" **General Service (GS) items with a QAL designation of Enhanced Quality and Commercial Quality not procured from an evaluated supplier** will be installed **as Safety Significant SSCs**, upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. For commercial grade items (QL-0), generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance manager.

   c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

      NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

   d. Complete the upgrade via the commercial grade item upgrade process. Refer to TFC-ENG-DESIGN-C-15 for requirements to upgrade materials.

   NOTE: This is not intended to allow procurement of material as commercial items to bypass the normal procurement process but is intended to allow prudent use of existing material through an evaluation process to support use in higher quality level applications.

3. If "existing" commercial grade items (QL-0) will be installed in an General Service (GS) application requiring Enhanced or Full Quality (QL-1, 2, or 3) designation, upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. Generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance Manager.

   c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

   NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

5.0 DEFINITIONS

Cloned BOM. A cloned BOM is created to procure items from a master BOM. Only the Quantity field can be changed. No additional items can be added to a cloned BOM. Technical approvals do not have to be obtained as they are transferred from the master BOM.

General use materials. Items such as office supplies (E-Store), office equipment (i.e., ADP equipment, telephones and accessories, fax machines, shredders, calculators), books, locks/keys, furniture, Franklin Planners.

Item. An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, unit, or support systems.

Public. Any person, organization, company, or foreign country having an interest in information concerning Tank Operations Contractor (TOC) activities, but not having a specific contract or agreement, which obligates them to protect the information. This category includes federal and state agencies, congress, the judicial system (the courts), media, foreign nations or for foreign exchange purpose, or prepared by foreign national assignees.

Master Bill of Materials (BOM). A master BOM may be generated for ordering spare parts already established in the WRPS Spare Parts program with a catalog ID set to Ready status (having the appropriate Engineering, QA and Materials approvals). By creating a Master BOM, with all of the required approvals, when a clone of the master BOM is created no additional technical approvals will be required in the approval process of the cloned BOM.

All of the line item fields in a cloned BOM are fixed and cannot be changed; the only exception is the quantity field. No additional lines can be added nor can any changes be made to the safety class, quality level etc. Because of the configuration control of the master BOM process, the technical approvals on the master BOM are sufficient and no additional technical approvals are required on the clone from an approved master BOM.

Sensitive Unclassified Information. SUI does not define a specific set of restrictions. SUI is any information, regardless of its physical form or characteristics, which has been determined to have relative sensitivity, requires mandatory protection because of statutory or regulatory restrictions or for which disclosure, loss, misuse, alteration, or destruction could adversely affect national security, government, or private interests. National security interests are those unclassified matters that relate to the national defense or foreign relations for the U.S. government. Governmental interests are those related, but not limited, to the wide range of government or government-derived economic, human, financial, industrial, agricultural, technological, and law enforcement information, as well as privacy or confidentiality of personal or commercial proprietary information.

Unauthorized procurement. An unauthorized procurement occurs when acquisition policies are not followed and/or commitments are made, items are purchased or contractors directed to start work by personnel who are not authorized to do so. When commitments are made on behalf of WRPS without authority or outside the standard acquisition processes, a ratification justification and approval must be prepared and submitted by the (person/staff/end user/ organization) creating that commitment.

Vital safety system. Safety-class systems, safety-significant systems, and systems that perform an important defense in depth safety function. Vital safety systems that perform important defense in depth functions are those that fall below the threshold for classification as safety-class or safety-significant, but perform an active function that within the context of the Authorization Basis, and in the judgment of the Chief Engineer, performs an important role to protect the public, worker, or the environment.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Equipment Bailment Agreement (A-6003-477)	N	N	N/A	ADM-17.28a	N/A	Procurement Services
Noncompetitive Justification	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services
Tank Farm Material Services System BOM or MR	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services
Acquisition Planning Document (APD) form (A-6003-485)	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services

The identified record custodian is responsible for record retention and retirement in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. 10 CFR 851.22 (c), "Hazard Prevention and Abatement."

2. Prime Contract DE-AC27-08RV14800, Clauses C.2, "Management Workscope."

3. RPP-8411, "Procurement Process Description," Section 5.1.3, "Alternate Procurement Methods."

4. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor."

5. RPP-PLAN-39433, "Procurement, Construction, and Acceptance Testing Plan."

    a. Section 3.1, "Procurement Bid and Work Packages (Purchase Orders)."
    b. Section 3.2, "Construction Bid and Work Packages (Subcontracts)."

6. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. HNF-PRO-3144, "Supplier Quality Assurance Program Evaluation."

2. RPP-RPT-29160, "Methodology for Equipment Safety Classification and QA Level Determination."

3. TFC-BSM-CP_CPR-C-01, "Purchasing Card (P-Card)."

4. TFC-BSM-CP_CPR-C-02, "Noncompetitive Procurement Justification."

5. TFC-BSM-CP_CPR-C-05, "Procurement of Services."

6. TFC-BSM-CP_CPR-C-09, "Supply Chain Process."

7. TFC-BSM_CP-CPR-C-15, "Capitalization Determination."

8. TFC-BSM-CP_CPR-C-18, "Material Receipt, Storage, Issuance, Return, and Excess Control."

9. TFC-BSM-CP_CPR-C-19, "Controlling Spare Parts and Spare Equipment Inventory."

10. TFC-BSM-CP_CPR-P-02, "Solicitation Process."

11. TFC-BSM-CP_CPR-P-03, "Selection and Award."

12. TFC-BSM-FPM_PR-C-01, "Property Management."

13. TFC-BSM-HR_EM-C-05, "Plant Forces Work Review (Davis-Bacon Act Compliance)."

14. TFC-BSM-HR_EM-C-07, "Work Turndown Process."

15. TFC-BSM-IRM_DC-C-02, "Records Management."

16. TFC-BSM-IRM_DC-C-03, "Information Clearance."

17. TFC-BSM-IRM-STD-03, "Unclassified Information Identification Standards."

18. TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication."

19. TFC-ENG-DESIGN-C-34, "Technical Requirements for Procurement."

20. TFC-ENG-DESIGN-D-13.2, "Guidance for Applying Engineering Codes and Standards to WRPS Statements of Work."

21. TFC-ENG-DESIGN-P-28, "Ventilation System Quality Assurance Level Determination."

22. TFC-ENG-FACSUP-C-23, "Equipment Identification and Data Management."

23. TFC-ESHQ-ENV-STD-02, "Regulated Substance Abuse."

24. TFC-ESHQ-IH-STD-04, "Asbestos Control – Facility Management/General Industry."

25. TFC-ESHQ-IH-STD-11, "Carcinogen Control."

26. TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance."

27. TFC-ESHQ-Q_ADM-C-02, "Nonconforming Item Reporting and Control."

28. TFC-ESHQ-Q_ADM-C-09, "Supplier Quality Assurance Program Evaluation."

29. TFC-ESHQ-Q_C-C-03, "Control of Suspect/Counterfeit Items."

30. TFC-ESHQ-Q_INSP-C-01, "Control of Inspections."

31. TFC-ESHQ-Q_INSP-C-04, "Inspection and Test Status Indicators."

32. TFC-ESHQ-S_IH-C-47, "Chemical Management Process."

33. TFC-ESHQ-S_SAF-C-09, "NRTL Requirements for Electrical Equipment."

34. TFC-ESHQ-S-STD-03, "Electrical Safety."

35. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

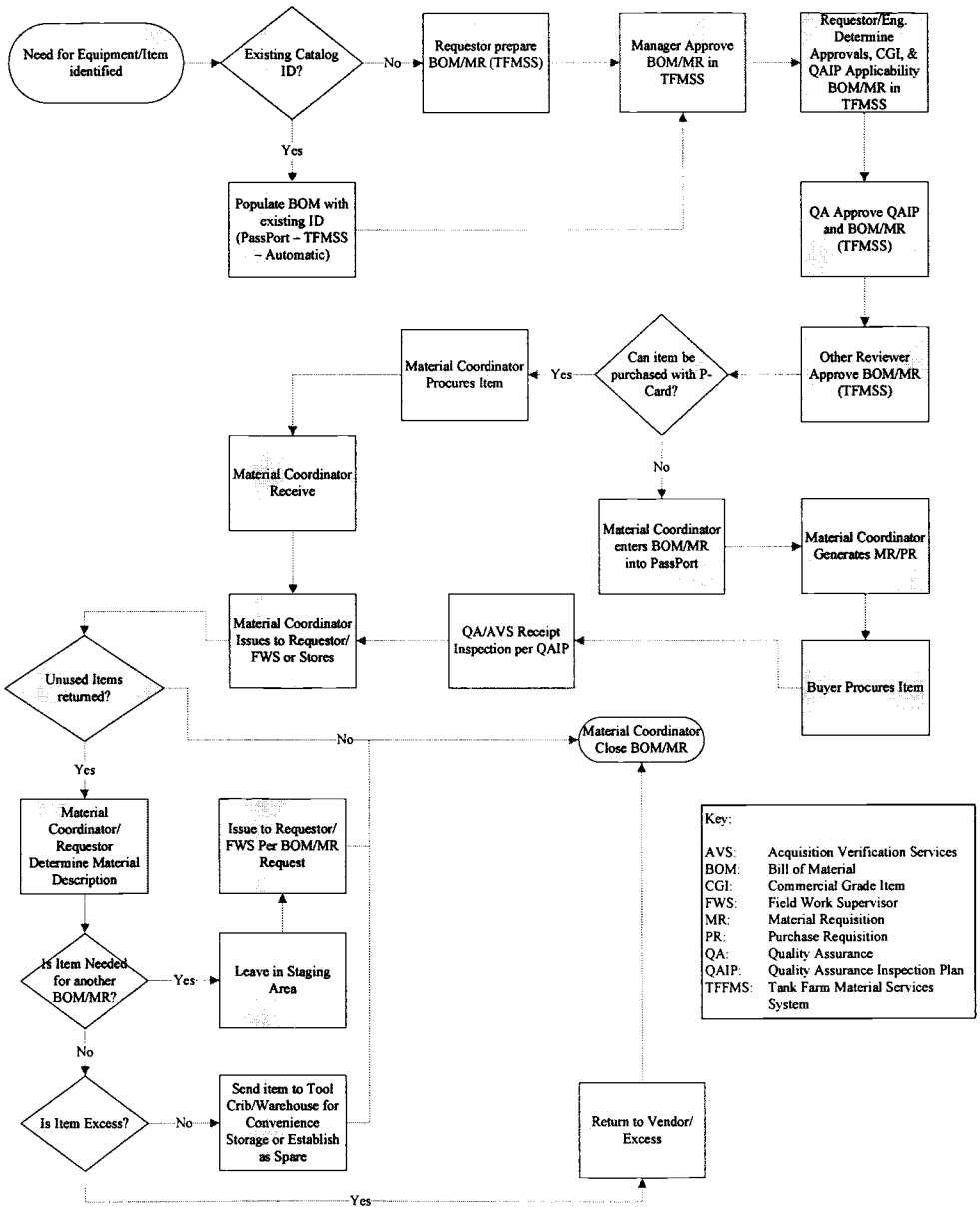
36. TFC-PLN-03, "Engineering Program Management Plan."

37. TFC-PLN-26, "Testing Program Plan."

38. TFC-PLN-58, "Chemical Management Plan."

39. TFC-PRJ-SUT-C-01, "Test Plan Preparation."

Figure 1. BOM/MR Request Process.



ATTACHMENT A - DETERMINING SUPPORTING DOCUMENTATION

Determination Statement	**Action**
1. Is an Acquisition Planning Document (APD) required? See TFC-BSM-CP_CPR-C-05	Refer to the APD Instructions to complete the form.
2. Is this a need to document procurement of an item/material already received?	Complete Unauthorized Procurement justification (see TFC-BSM-CP_CPR-C-05 for instructions.
3. Is the item/material a carcinogen or a controlled compound?	Review and comply with TFC-ESHQ-IH-STD-11 then complete BOM/MR.
4. Does the item/material contain hazardous material (PCBs or asbestos)?	Review and comply with TFC-PLN-58 and TFC-ESHQ-IH-STD-04, then complete BOM/MR.
5. Does the item/material contain an ozone depleting substance (i.e., refrigerants)?	Review and comply withTFC-ESHQ-ENV-STD-02, then complete BOM/MR.
6. Does the item involve engineered and/or fabricated parts or components and include construction or fabrication that could be completed by Hanford Atomic Metal Trades Council (HAMTC) per TFC-BSM-HR_EM-C-05?	Determine if this work will be submitted for a Plant Forces Work Review (PFWR), if **not**, include a statement with justification with the BOM/MR per TFC-BSM-HR_EM-C-05
7. Does the item involve engineered and/or fabricated parts or components that require the work be submitted for a Plant Forces Work Review (PFWR)?	Provide the PFWR No. on the BOM/MR and a statement indicating the work was submitted for a PFWR and that plant forces **cannot** perform the work. Submit a Work Turndown Check Sheet with the BOM/MR in accordance with TFC-BSM-HR_EM-C-07. If the Plant Forces can perform the work, exit this procedure and refer to TFC-BSM-CP_CPR-C-05 and TFC-OPS_MAINT-C-01 to secure the work.
8. Does the item involve engineered and/or fabricated parts or a component that represents a change to work HAMTC initially turned down, such as delivery schedule and scope changes, and **hasn't** been awarded?	Obtain Labor Relations review and agreement before proceeding. Labor Relations will solicit HAMTC feedback (may require a new formal turndown). Proceed with the change to the BOM/MR and reference the PFWR in the comments. Labor Relations will notify the requestor no later than two work days after request if a turndown meeting is not required, or agreement/recommendation after the formal turndown meeting. NOTE: Formal turndown meetings should be scheduled less than one week after a request to Labor Relations.

ATTACHMENT A – DETERMINING SUPPORTING DOCUMENTATION (cont.)

9. Does the item involve engineered and/or fabricated parts or components that have been awarded and were turned down by HAMTC?	Notify Labor Relations and proceed with the change and reference the PFWR in the comments.
10. Is the item/material part of a Davis-Bacon covered project where the item/material is being ordered by the construction subcontractor and will be installed by Building Trades crafts?	The subcontractor will order the material and coordinate its receipt and inspection. If WRPS is providing government furnished equipment (GFE) and has not signed the Hanford Site Stabilization Agreement, and the equipment is not a requirement in the subcontract, then the requestor may use the BOM/MR process with Materials involvement, or may request the material directly via a MR in PassPort.
11. Is the item/material part of a Davis-Bacon covered construction project where the item/material is being provided by WRPS as government furnished equipment (GFE) and WRPS is not signatory to the Hanford Site Stabilization Agreement	The ordering of items/material is neither HAMTC nor Building Trades. The requestor may choose to use the BOM/MR process via Materials or may request the material directly via a MR in PassPort. If the requestor chooses to request material directly (without Materials Involvement) then the requester is directly responsible for ensuring material is requested with appropriate approvals (Determination of Required Approvals - Items) and received, stored and inspected appropriately. See TFC-BSM-CP_CPR-C-18. NOTE: If the requester chooses to request material directly, he/she must follow the process described in Section 4.1 but document it in PassPort on a Material Request; he/she will be performing the responsibilities of the planner/requester and Materials throughout Section 4.1
12. Is this is a noncompetitive procurement of an item/material?	Develop a noncompetitive justification in accordance with TFC-BSM-CP_CPR-C-02 and submit with BOM/MR.
13. Is a mandatory source required per Mandatory Source Checklist Screening Tool? A mandatory source is one that must be used due to existing DOE, Site or Company agreements.	Submit Mandatory Source Checklist Screening Tool with BOM/MR.
14. Does the proposed acquisition include material identified by Executive Order 13423 or DOE Order 450.1A which requires using recycled materials when possible?	Specify on the BOM/MR that the materials to be acquired must contain recovered materials to the minimums currently specified.

ATTACHMENT A – DETERMINING SUPPORTING DOCUMENTATION (cont.)

15. Is a capitalization determination required per See TFC-BSM-CP_CPR-C-15?	Contact WRPS Controller to request a capitalization plan.
16. Is this a Davis-Bacon covered construction project that has been cancelled or delayed more than 90 calendar days?	The care and custody of project equipment and materials, regardless of how they were acquired or what process was used to obtain them, must be managed per TFC-BSM-CP_CPR-C-18.
17. Is the procurement for prescription safety glasses, safety shoes, or winter clothing?	Exit this procedure and proceed to TFC-BSM-CP_CPR-C-01 for guidance.

ATTACHMENT B – GSAXCESS™ FORM (Revised DOE Format)

Complete this form to obtain a GSA Password/Access Code to use GSAXcess, formerly Federal Excess Disposal System (FEDS). Send the completed application to your Organizational Property Management Officer (OPMO) who will review, approve and forward it to the National Utilization Officer in the Office of Resource Management.

Required Information

(Please print legibly)

Name Telephone Number Fax Number

Agency Name – U.S. Department of Energy

Field Office/Contractor Name WRPS

Complete Mailing Address _____

_____

_____

_____

E-Mail Address _____

Agency/Bureau Code Activity Address Code

Permission Levels: (Please Check All That Apply)

Search Only _____

Search/Select _____

Transfer _____

Report Property _____

Approved: (OPMO) _____

***ALL CHANGES, ADDITIONS/DELETIONS MUST BE REPORTED TO NUO** (REVISED 10/23/03)*

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1)

This management directive provides direction (revised beyond requirements in TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication;" TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance;" and TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)" for: 1) Revising the requirements for procurement of safety significant SSCs, 2) revising the criteria for determining when commercial grade item dedication is required, 3) revising the review and approval requirements for procurement of safety significant commercial grade items, and 4) setting additional requirements for commercial grade item dedication output documents. These activities are being revised to ensure that the safety functions of safety significant SSCs are preserved (i.e., that the commercial grade item is suitable for use in its intended application, and that the item will perform its safety function).

A summary of the revised requirement changes are as follows:

- All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.
- Initial review and approval of CGIs by the applicable Lead Discipline Engineer as the Design Authority approval is required.
- An additional QA final review and approval of CGIs, and final review and approval of the CGIs by the responsible manager as Design Authority approval, is required.
- Attachment A of TFC-ENG-DESIGN-C-15 was revised to require the completion of Sections 1-8 for all CGIs.
- Added requirements to address the CGI/QAIP interface for verification of critical characteristics.
- Added an independent review and approval of all procurements of safety significant SSCs by QA and Engineering Central DA & Standards. (This independent review is in addition to the normal required reviews and approvals.)
- Revised the definition of Commercial Grade Item to be consistent with the 2nd definition contained in ASME NQA-1-2004.
- Added additional guidance regarding technical evaluation and basis information that is required to be documented as part of the dedication process.
- Added a final review by a senior Engineering and Quality Assurance person that are independent from the package development.

2.0 IMPLEMENTATION

This management directive is effective for all WRPS procurements initiated after 01/18/09, and for all safety significant items procured prior to 1/18/09, but not yet installed, and not specifically covered by JCO TF-09-01. This management directive will remain in effect until the applicable procedures are revised to incorporate these revised requirements. The changes in this revision are effective for all commercial grade item dedications approved after the effective date of this revision.

3.0 APPLICABILITY

This directive applies to all work performed by or at the direction of Washington River Protection Solutions (WRPS).

4.0 FORMAL IMPLEMENTATION

Items listed in **bold** provide emphasis of revised requirements.

4.1 Revised Requirements for Procurement of Safety Significant SSCs

1. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.**

2. **Revise TFC-BSM-CP CPR-C-06 as follows:**

   a. Section 4.1, Item 4, NOTE:

WRPS Quality Assurance Level	TFMSS Quality Level	Safety Code *
Commercial	QL-0	**General Service**
Enhanced	QL-3	**General Service**
Full	QL-1 or QL-2 **	General Service Safety Significant Safety Class

* Safety Code is equal to that assigned to the system that the component is to be installed into.

** Items designated Full Quality can be procured either as QL-1 or QL-2 – the end results are identical – either the supplier is an evaluated supplier or the item goes through a commercial grade item dedication process. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.**

4.2 Revised Requirements for Commercial Grade Item Dedication

1. Revise TFC-ENG-DESIGN-C-15 as follows:

a. ***Table of Contents*** – Add Attachment C – Determining Critical Characteristics (attached)

1) Section 1.0 "PURPOSE AND SCOPE"

This procedure establishes the dedication process, dedication requirements, and related responsibilities for the use of safety significant SSCs with a QAL designation of Full Quality, Enhanced Quality, and Commercial Quality not procured from an evaluated supplier (see Section 5.0, "Definitions") for Hanford Tank Operations Contractor (TOC) managed nuclear facilities. These activities are performed to ensure that the safety functions of safety significant SSCs are preserved (i.e., the item is suitable for use in its intended application and that the item will perform its safety function) and to protect the design baseline from being inadvertently changed. The purpose of this procedure is not to define procurement steps. Refer to TFC-ENG-DESIGN-C-34 for procurement guidance.

This procedure applies to all TOC organizations (facilities or projects) that determine technical and quality requirements for existing or new items in safety significant applications.

b. **Section 4.1** - Add the following:

8. **A Commercial Grade Item Upgrade Dedication form (A-6002-544) shall be prepared and approved prior to procurement of all safety significant SSCs with a QAL designation of Full Quality, Enhanced Quality and Commercial Quality not procured from an evaluated supplier.**

NOTE: At-risk procurement and installation activities may be approved by the Chief Engineer or designee. In those cases, at least section 8 of the CGI dedication form must be complated (QAIP is acceptable), and existing processes (e.g., QAIPS, conditional acceptance tags, NCRs, etc.) should be used to ensure the item is not placed into service prior to approval of the complete CGI dedication package.

c. Section 4.3, "Establishing Documentation Needs"

Item 2 - **NOTE** – Revise "Attachment A" to "Attachment C"

Item 3 – Revise reference from "Section 4.9" to "Section 4.8."

d. Section 4.6, Item 2 - Revise as follows"

" 2. Determine item failure mechanism(s) that cause item to fail safety function, and identify the critical characteristics to address the failure modes."

e. Section 4.8, Item 1.- Add the following:

" .... (Refer to Attachment C for guidance on determining critical characteristics.)"

f. Section 4.10 Obtain Initial Reviews and Approval to Proceed with Verification

NOTE: Signatures below denote that the signer has reviewed all relative and pertinent information for their areas of responsibility, including assurance that the information provided is both complete and accurate.

Responsible Engineer	1.	Review dedication form.
	2.	Sign appropriate blank in Section 8 of A-6002-544.
Design Organization	3.	If a design organization staff member prepared A-6002-544, ensure that it is additionally reviewed and signed in Section 8 **by the Design Agent**.
Quality Assurance Engineer	4.	Review the upgrade dedication form and sign Section 8 of A-6002-544.
Lead Discipline Engineer	5.	**Review the upgrade dedication form and sign Section 8 of A-6002-544 as the Design Authority.**

g. Section 4.12 Obtain Final Reviews and Approval

Responsible Engineer	1.	Review the completed dedication form and sign Section 8 of A-6002-544.
Design Organization	2.	If a design organization **completes** A-6002-544, ensure that it is additionally reviewed and signed in Section 8 **by the Design Agent**.
Quality Assurance Engineer	**3.**	**Review the upgrade dedication package and sign Section 8 of A-6002-544.**
Responsible Manager	**4.**	**Review the completed dedication form and sign Section 8 of A-6002-544 as the Design Authority**
Central DA & Standards Manager	**5.**	**Review the upgrade dedication package and sign Section 8 of A-6002-544.**

QA Support Manager

6. **Review the upgrade dedication package and sign Section 8 of A-6002-544.**

Responsible Engineer

7. Submit completed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.

h. Section 5.0 DEFINITIONS

Commercial grade item. A structure, system, or component, or part thereof, that affects its safety function, that was not designed and manufactured in accordance with the requirements of ASME NQA-1.

Dedication, NOTE:

NOTE: Per this procedure, the dedication process applies to safety significant SSCs with a QAL designation of ***Full Quality, Enhanced Quality, or Commercial Quality not procured from an evaluated supplier.***

i. Section 7.1 Requirements

2. ASME NQA-1-**2004**, "Quality Assurance Program Requirements for Nuclear Facilities."

j. **Figure 1** – Delete "Is QAL Full or Enhanced?" block.

k. Attachment A -

2) Revise the title "system engineer" to "responsible engineer" throughout.

1) Section 1, Item 1.6 - Add the following:

"..... Identify the specific design functions (including known safety functions) of the item. (Refer to EPRI Report NP-6406 and EPRI Report NP-6895 for detailed guidance) Identify the properties or attributes that are essential for the item's form, fit and functional performance."

2) Section 2, Item 2.8 – Add the following"

" .....Identify the specific design functions (including known safety functions) of the item. (Refer to EPRI Report NP-6406 and EPRI Report NP-6895 for detailed guidance) Identify the properties or attributes that are essential for the item's form, fit and functional performance."

3) Section 5, Item 5.3 – Add the following:

"..... Identify the critical characteristics to address the failure modes."

4) Section 3-Type of Replacement

After the SSC has been classified as safety significant an evaluation is performed to determine if any form, fit, function, manufacturing processes, or materials of construction have changed between the installed and the replacement item(s), unless it is a new application for a modification or project.

5) Section 4- Part/Component Safety Classification

4.1 Part/Component Safety Classification, 1st paragraph: **The item's classification is listed as safety significant. (Delete the remainder of this 1st paragraph.)**

6) Section 8- Verification of Critical Characteristics, Item 8.8:

8.8 Indicate the verifying Organization (e.g., Quality Assurance, procurement support, offsite laboratory, etc.).

NOTE: For those critical characteristics verified by receipt inspection, the responsible engineer or QA shall note the Verifying Organization as "AVS" or "WRPS QC", sign the critical characteristics as being verified, and attach a copy of the completed **Quality Assurance Inspection Plan (QAIP), and associated documents (e.g. test reports, certificates of calibration, material test reports, certificates of conformance, etc.)**.

l. Attachment B

3) **Section 2.0, SCOPE** - Delete "....and having an assigned QAL of FULL ...."

4) Section 6.0, PART PROCUREMENT/MATERIAL CONTROL NOTES, Item 1- Delete "....with a QAL designation of FULL...."

2. **Revise TFC-ESHQ-Q_ADM-C-01 as follows:**

a. Table 1- Revise as follows:

Quality Assurance Criteria	Full Quality Imposed/ High Project Risk	Enhanced Quality Imposed/Medium Project Risk	Enhanced Quality Imposed/Low Project Risk	Commercial Quality Imposed
Program	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD	TFC-PLN-02, QAPD
Procurement	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. Approved supplier from Evaluated Supplier List if not procured as **dedicated** commercial grade item. Development of Subcontractor Oversight Plans	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. Quality Assurance review and approval of procurement documents. **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**	Use of Material Request/Contract Requisition. **Quality Assurance review and approval of procurement documents for SS SSCs.** **Approved supplier from Evaluated Supplier List if not procured as dedicated commercial grade item for SS SSCs.**

b. Table 2- Add the following NOTE:

"NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier."

c. Table 3- Revise as follows:

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***YES***	***NO***
Safety Significant (All QALs)	***QL 2***	***YES***	***AVS or WRPS QC***	***YES***	***NO***	***YES***

NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.

	Passport QL	*S/CI*	*Receipt Insp.*	*QAIP req'd*	*ESL*	***CGI***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***YES***	***NO***
General Service *Full Quality*	*QL 1/2*	*YES*	*AVS or WRPS QC*	*YES*	***NO***	***Note 1***
General Service *Enhanced Quality*	*QL 3*	*YES*	*AVS or WRPS QC*	*YES*	*NO*	***Note 1***
General Service *Commercial Quality*	*QL 0*	*YES*	*MC*	*NO*	*NO*	***NO***

AVS – Mission Support Contractor Acquisition Verification Services
MC - **WRPS** Material Control

NOTE 1: The responsible engineer and quality engineer will determine the method of procurement, acceptance criteria, and acceptance methods.

d. Table 4 - Add the following NOTE:

"NOTE: All safety significant SSCs shall be procured as QL-2, regardless of assigned Quality Assurance Level (QAL). Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier."

3. Revise TFC-BSM-CP_CPR-C-06 as follows:

a. Section 4.1, Item 12.b: Ensure the appropriate Quality attributes have been applied for the items/materials being procured, in accordance with RPP-RPT-29160 and the applicable Commercial Grade Item Upgrade Dedication form (A-6002-544) (for Safety Significant SSCs) and/or **TFC-ESHQ-Q_ADM-C-01** as applicable.

b. Section 4.1, Item 20.a: Delete

c. Section 4.1, Item 20, NOTE: Delete

d. **Section 4.5,** Commercial Grade items:

Responsible Engineer

1. **For Safety Significant SSCs with a QAL designation of Full Quality, Enhanced Quality, or Commercial Quality not procured from an evaluated supplier**, it shall be demonstrated as suitable for use in its intended application. In accordance with TFC-PLN-03, this requires a documented engineering evaluation to establish and verify critical characteristics before the item is relied on for operation. Critical design characteristics and appropriateness of the item for use shall be verified (e.g., inspection, testing). Refer to TFC-ENG-DESIGN-C-15 for the commercial grade item dedication process.

2. If "existing" **General Service (GS) items with a QAL designation of Enhanced Quality and Commercial Quality not procured from an evaluated supplier** will be installed **as Safety Significant SSCs** upgrade that material in accordance with the following:

   a) If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b) For commercial grade items (QL-0), generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance manager.

   c) Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

      NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

   d) Complete the upgrade via the commercial grade item upgrade dedication process. Refer to TFC-ENG-DESIGN-C-15 for requirements to upgrade materials.

      NOTE: This is not intended to allow procurement of material as commercial items to bypass the normal procurement process but is intended to allow prudent use of existing material through an evaluation process to support use in higher quality level applications.

3. If "existing" commercial grade items (QL-0) will be installed in an General Service (GS) application requiring Enhanced or Full Quality (QL-1, 2, or 3) designation, upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. Generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance Manager.

   c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

   NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

e. ATTACHMENT B - Add the following:

	Determination Statement	Yes	No	Approval Required	Document Approval On
15	All items classified as Safety Significant are to be independently approved by Engineering Design Authority & Standards and Quality Assurance.			Engineering Design Authority & Standards Quality Assurance	E-Mail

NOTE: At-risk procurement and installation activities may be approved by the Chief Engineer or designee. Independent review and approval by Central Design Authority & Standards and Quality Assurance is not required for at-risk procurements.

f. Attachment C – add new attachment C, Determining Critical Characteristics as follows:

1.0 ***IDENTIFICATION AND SELECTION OF CRITICAL CHARACTERISTICS*** (Ref EPRI NP-5652, June, 1988 and EPRI TR-102260, March, 1994)

Critical characteristics are identifiable and measurable attributes/variables of a commercial grade item which once verified, provide reasonable assurance that the item received is the item specified. Based on the performance and design basis for an item, a variety of characteristics can be identified that are critical for satisfactory performance. However, for purposes of establishing critical characteristics for acceptance, only certain of these must be verified to provide reasonable assurance that the item specified is the item received. Commercial grade items which perform safety functions inherently have one or more

characteristics critical to assuring equivalency to the item it is intended to replace. The item's part number by definition is a critical characteristic.

1.1 *Types of Critical Characteristics*

Critical characteristics that could be identified, in addition to the part number, are physical characteristics of an item, identification markings, or performance characteristics of the item. A general listing of typical critical characteristics is provided in Table C-1. A listing of typical commercial grade items, their intended application, and potential critical characteristics is provided in Tables C-2 and C-3. The potential critical characteristics associated with the items in Tables C-1, C-2, and C-3 are provided for illustration only. These lists are not intended to be all inclusive or exclusive of critical characteristics which may be deemed important to specific applications. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified. Commercial grade items intended for installation in seismically or environmentally qualified applications require critical characteristics necessary to assure that the original qualification of the parent component is maintained. A discussion on maintaining seismic and environmental qualification is provided in Appendix F of EPRI NP-5652, June, 1988. Commercial grade items intended for generic safety-related applications rather than for installation in specific applications require special consideration when selecting critical characteristics. Critical characteristics should be selected based on the most severe conditions encountered in the generic application unless controls are in place to prevent inappropriate use. These controls should be sufficient to ensure that commercial grade items are not used in applications for which they have not been evaluated and accepted. A discussion regarding generic and specific applications is provided in Appendix G of EPRI NP-5652, June, 1988.

1.2 Selection of Critical Characteristics.

It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received meets specified requirements. The term "critical characteristics" is defined as those "measurable and identifiable attributes/variables of a commercial grade item, which once selected to be verified, provide reasonable assurance that the item received is the item specified." It is important to differentiate those critical characteristics selected to describe "critical characteristics for acceptance," and a broader definition for "critical characteristics for design." Critical characteristics for design are "those properties or attributes which are essential for the item's form, fit and functional performance. The selection of critical characteristics for acceptance is "based upon the complexity, intended safety-related function, and performance of the CGI" using engineering judgment. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified.

1.3 *Proper Relationship of Critical Characteristics*

Regarding critical characteristics for acceptance, critical characteristics that could be identified are physical characteristics of an item, performance characteristics of the item, as well as product identification characteristics. They should include some number of "critical characteristics for design" as well as product identification characteristics such as part number. The critical characteristics for acceptance that are physical and performance characteristics are a subset of the larger population of critical characteristics for design. Physical or performance characteristics of the item that may have been specified in the original equipment specification and affect the item's safety-related functional performance should be considered as those selected for verification. If the original equipment specification did not specify technical and quality requirements at the item level, then the critical characteristics selected for verification during the acceptance process should be based upon "the complexity, intended safety-related function, and performance" of the item. Once the critical characteristics for acceptance have been selected for a commercial grade item, each one should be verified using one or a combination of the four acceptance methods. Verification of the selected critical characteristics for acceptance should provide the purchaser confidence that the remaining characteristics of the item are also conforming to the item design. In achieving reasonable assurance, it is assumed that if the properly selected critical characteristics for acceptance are conforming, then the remaining critical characteristics for design were also adequately controlled by the supplier. Sole reliance on part number verification is inadequate to reasonably assure the CGI received met specified requirements. Similarly, reliance only on the verification of product identification characteristics is generally inadequate to reasonably assure the CGI received met specified requirements. The relationship of critical characteristics is graphically conveyed in Figure C-1.

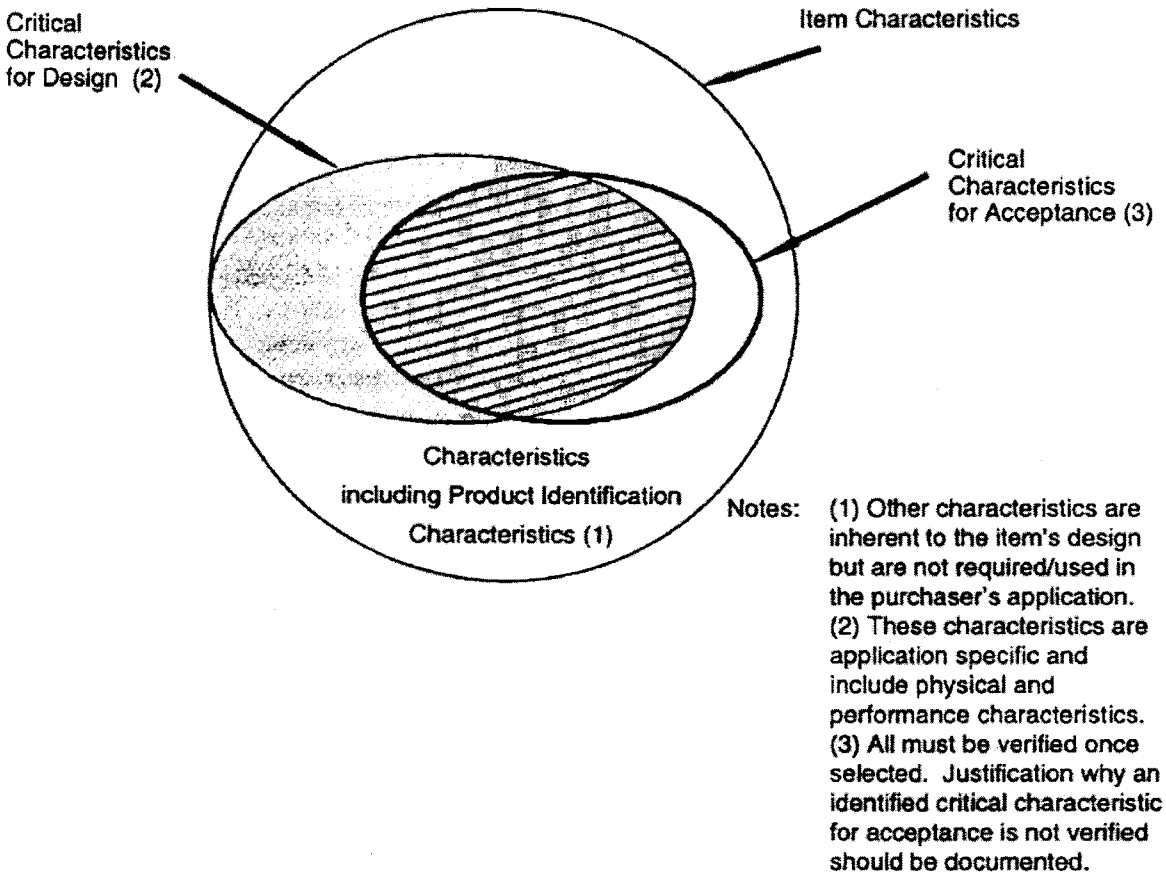
The critical characteristics for acceptance that are physical and performance characteristics are depicted by the cross-hatched segment in Figure 1. This crosshatched segment represents the subset of the larger population of critical characteristics for design. Selected critical characteristics essential for the item's safety-related functional performance would be included in those represented by the cross-hatched area.

It must be recognized that many items are uniquely identified by means other than by a part number. This may affect the selection of product identification critical characteristics for verification during the acceptance process. Caution should be used when relying on part number as contributing to the item acceptance if there is no basis for knowing that the part number has been correctly applied to the item.

1.4 Lessons Learned

1) If adequate technical and quality requirements for the item are available from existing design basis information, then they may be used to establish critical

Figure C-1. Proper Relationship of Critical Characteristics.



characteristics for acceptance without performing a new determination of critical characteristics for design. Original item specifications (or current approved revisions) are the preferred source for determination of critical characteristics for design, where such specifications are available or can reasonably be obtained. Specifications used to identify critical characteristics for design must be at the appropriate level of detail for the item being procured. For example, if an entire replacement valve is being procured, then the valve specification may be the appropriate specification for determination of critical characteristics for design. However, if a replacement valve stem is being procured, then the valve specification alone may not completely define the stem's technical and quality requirements. Additional design information may be available from the valve supplier. If this information can be reasonably obtained, it is the preferred source of information from which to determine critical characteristics for design. If

adequate design information cannot be obtained at the level of detail necessary, then determination of critical characteristics for design based on an analysis of safety functions and failure modes and effects may be performed.

2) An effective process for establishing critical characteristics is as follows:

Process

- What are the safety function(s) of the host component? (Refer to EPRI Report NP-6895 for detailed guidance)
- What are the plant-specific design function(s) (including known safety functions) of the item? (Refer to EPRI Report NP-6406 and EPRI Report NP-6895 for detailed guidance)
- What are postulated, credible failure mechanism(s) of the item?
- Will failure mode adversely affect component/system design function?
- What properties or attributes are essential for the item's form, fit and functional performance?
- What properties or attributes provide reasonable assurance the item received meets specified requirements?

1.5 *Identification and Selection of Critical Characteristics for Acceptance/Achieving Reasonable Assurance in the Context of CGI Acceptance*

This Example is provided to demonstrate the identification of critical characteristics for design and the selection of critical characteristics for acceptance. It is further developed to demonstrate achieving reasonable assurance in the context of CGI acceptance.

Example

I. Replacement Item: Valve Stem (sixteen are procured)

II. Host Component: Active valve required to open and close

III. Function of Item and Functional Classification:

The plant-specific design function of the valve stem is first identified considering the Host component's safety function. The safety function of the stem is to open and close the valve during normal and accident conditions within specified times.

IV. Factors considered in achieving reasonable assurance:

A. Were the proper critical characteristics for acceptance selected for verification (based upon the complexity, intended safety-related function, and performance of the item)?

Critical characteristics for design (CCDs) are first considered. The CDDS may be formally documented if an equivalency evaluation was required. Otherwise, potential CCDs may be informally determined by examining procurement technical requirements, the supplier's part drawing, and considering the valve stem's safety function.

The supplier may not control all critical characteristics for design unless he had made a commitment. This commitment is evidenced by:

a. Accepting technical requirements related to the CCDs in the purchase order,
b. Identifying that it controls the CCDs in its product literature (e.g., catalog, product specification),
c. Internal program commitment (e.g., part drawings, sub-supplier purchase order requirements).

Critical Characteristics for Design for the subject valve stem are determined to be:

- Dimensions including tolerances necessary for the item's functional performance
- Material chemical composition and grade
- Yield Strength
- Tensile Strength
- Reduction in Area (indication of ductility)
- Hardness
- Surface Finish

The original equipment manufacturer established the technical requirements for the stem based on the host component's design function.

The critical characteristics for acceptance are selected from the critical characteristics for design. Also, considered in the selection process are product identification characteristics. After considering the above potential critical characteristics, the responsible technical person selects the following critical characteristics for acceptance:

- Stem length
- Stem diameter
- Material grade
- Hardness
- Configuration
- Part Number.

B. What is the degree of verification of each critical characteristic for acceptance?

Part number	Visually inspected to ensure the item was tagged with the manufacturer's part number
Stem length	Measured dimension to verify it was 6.250" + 0.000" - 0.002"
Stem diameter	Measured dimension to verify it was 1.663 + 0.001" NOTE: Both dimensions were further verified by measuring the stroke time of the valve during post-installation test.
Configuration	Visually inspected configuration by comparing the item to the manufacturer's published product description (i.e., valve assembly drawing).
Material grade	Verified material grade is ASTM **A276,** Type 316 stainless steel with an alloy analyzer utilizing the services at an approved test facility.
Hardness	Verified Brinnell hardness is between 165 and 195 utilizing hardness tester owned by the utility.

C. Sample Size

Sixteen items were procured on the purchase order and a lot of sixteen was established. EPRI Report NP-7218 was referenced to determine a sample size for each critical characteristic for acceptance. Results are shown below.

Critical Characteristics for Acceptance	**Sample Size**	**Reference**
Part Number, Configuration,	16	EPRI Report NP-7218 (100%)
Stem Length & Diameter	5	EPRI Report NP-7218 (Normal)
Material Grade	3	EPRI Report NP-7218 (Reduced)
Hardness	10	EPRI Report NP-7218 (Tightened)

V. Discussion of Example:

An adequate technical evaluation was performed which enabled the purchaser to specify the item correctly. To accept the CGI for safety-related use, the user employed engineering judgment for considering several factors to achieve reasonable assurance. **Selected critical**

characteristics for acceptance included both product identification and physical, comprising four measurable attributes and two identifiable attributes. Method I – Special Tests and Inspections was implemented to verify the selected critical characteristics using both receipt tests/ inspections as well as post-installation testing. The **degree** of **verification of each critical characteristic** appropriately corresponded to the design functions of the item for its intended application. The **sampling** method was appropriate for the item being procured. Upon completion of the critical characteristic verification, the user was reasonably assured the items received met specified requirements and were acceptable for safety-related use.

In summary, reasonable assurance is obtained that the item received meets specified requirements without having verified all CCDs. The verification activities provide sufficient confidence that the supplier has met his contractual obligation to provide an item meeting the procurement technical requirements.

Table C-1. General Listing of Typical Critical Characteristics.

Product Identification

Color coding
Display type (scale, graduation)
Enclosure type
Industry standard markings
Nameplate data
Part number/unique identifier

Physical Characteristics

Balance
Capacitance
Cloud point
Coating
Color
Composite material hardness
Concentration
Conductivity
Continuity
Density/Specific gravity
Dielectric strength
Dimensions (to within manufacturer's tolerance)
Drop point
Ductility
Durometer hardness
Elasticity
Fatigue resistance
Flammability
Flashpoint
General configuration or shape
Homogeneity
Inductance
Leachable halogen content
Luminescence
Material of construction
Permeability
Plating
Polarity
Pour point
Purity
Resilience
Resistance
Solubility
Spring constant
Surface finish
Surface hardness
Tensile strength
Torque
Viscosity
Weight

Performance Characteristics

Accuracy
Burn-in endurance
Chatter
Current rating
Cycle time
Deadband width
Flow rate
Gain
Horsepower
Input/output voltage
Interrupt rating
Interrupting current
Leakage
Load rating
Open/closure time
Operability (fail open/close, stroke)
Operating range
Performance (no drift) during under voltage conditions
Pick-up/Drop-out voltage
Power rating
Pressure drop
Pressure rating
Repeatability
Ride out
Rational direction
Set point stability
Speed
Time/current response
Voltage rating

Table C-2. Critical Characteristics Applied to Specific Items.

Commercial Grade Item (Application)	Critical Characteristics
Valve Stem	Configuration, dimensions, material, tensile strength, ductility, finish, markings, hardness
Pump Impeller	Configuration, dimensions, material, hardness, balance, flow rate
Motor	Nameplate data (horsepower, speed), insulation class, frame size, materials, weight, shaft type, coupling type, bearing types
Nonmetallic Diaphragm	Configuration, dimensions, material, durometer hardness, reinforcement material
Solenoid Valve	Configuration, size, pressure rating, materials, voltage rating, current rating, coil class, open/closure time
Limit Switch	Configuration, dimensions, materials (metallic and nonmetallic), markings, operability, voltage rating, current rating
Impeller Key	Configuration, dimensions, material, hardness
Spring	Configuration, dimensions (free length, coil diameter), spring rate, finish
Valve Packing Gland	Configuration, dimensions, material, tensile strength, hardness, finish
Filter Regulator Assembly	Configuration, dimensions, materials, flow rate, pressure range, pressure rating, temperature rating, filter micron size

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

Table C-2. Critical Characteristics Applied to Specific Items.

Commercial Grade Item (Application)	Critical Characteristics
Pinion Gear	Configuration, dimensions, material, hardness, pitch
Crane Wheel Axle	Configuration, dimension, material, tensile strength, hardness, finish
Shaft Coupling	Configuration, dimensions, materials, hardness
Anchor Bolt	Configuration, dimensions, material, wedge hardness, pitch
Torque Switch	Configuration, dimensions, materials (metallic and nonmetallic), operability
Pump Mechanical Seal Assembly	Configuration (completeness of assembly), materials, finish, leakage, leachable halogen content, dimensions
Valve Seal Ring	Configuration, material dimensions, finish leakage
Integrated Circuit	Configuration, gain, input/output impedance, frequency responses, operability
Pressure Transmitter	Configuration, voltage rating, current output, pressure rating, materials, accuracy
Control Switch	General configuration, contact configuration, voltage rating, current rating, materials, dimensions, operability
Transistor	Markings, gain, input/output impedance, current rating, voltage rating, operability

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

Table C-3. Critical Characteristics Applied to Generic (Commodity) Items. (cont.)

Commercial Grade Item	Critical Characteristics
Bearing	Configuration, dimensions, load rating, material, model number
Bolting	Configuration, dimensions, pitch, material, tensile strength, hardness, plating
O-ring	Dimensions, material, durometer hardness, elongation, leachable halogens
Terminal Block	Configuration, voltage rating, current rating, materials, dielectric strength
Crimped Terminal Connector	Configuration, material, dimensions (wire size, ring tong size), voltage rating, continuity, tensile pullout strength, color
Relay	Configuration, pick-up/drop out voltage, voltage rating, current rating, chatter, response time
Fuse	Configuration, current rating, interrupt rating, time/current response, dimensions
Resistor	Configuration, markings, resistance, power rating
Drive Belt	Dimensions, cross-sectional shape, ride out, fatigue resistance, load rating, material, tensile strength
Spiral Wound Gasket	Configuration, dimensions, markings, style number, materials (filler and windings), pressure rating, leachable halogens, spiral density
Cotter Pin	Configuration (point type), dimensions, material, finish, hardness

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

Table C-3. Critical Characteristics Applied to Generic (Commodity) Items. (cont.)

Commercial Grade Item	Critical Characteristics
Pressure Switch	Configuration, dimensions, material (pressure retaining parts), voltage rating, response time, accuracy, nameplate data, pressure range, wire rating, enclosure type, dielectric strength (insulation), deadband width
Temperature Switch	Configuration, dimensions, material, voltage rating, response time, accuracy, nameplate data, temperature range, wire rating, enclosure type dielectric strength (insulation), deadband width
Lubricating Grease/Oil	Color, specific gravity, viscosity, drop point, cone penetration, pour point, chemical composition, cloud point
Fuel Oil	Density, flash point, cloud point, pour point, kinematic viscosity, chemical composition, BTU rating
Framing Device	Configuration, shape, dimensions, material, tensile strength coating
Material (e.g., Plate, Angle)	Dimensions, shape, material, tensile strength, hardness, ductility, markings, coating

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

5.0 DEFINITIONS

No terms or phrases unique to this management directive are used.

6.0 RECORDS

No records are generated in the performance of this management directive.

7.0 SOURCES

7.1 Requirements

1. ASME NQA-1-2004, "Quality Assurance Program Requirements for Nuclear Facilities."

7.2 References

1. TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)."
2. TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication."
3. TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance."
4. TFC-PLN-02, "Quality Assurance Program Description."

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.6)

1.1 Purpose

This procedure defines the process for procuring quality level (Section 4.2) materials or items utilizing a Bill of Material (BOM) or a Material Requisition (MR) (see Section 4.1). Use of a Master BOM is also defined in Section 4.3. This process is available via the electronic Tank Farm Material Services System (TFMSS) or PassPort system and is used for the procurement/acquisition of engineered equipment, materials for construction activities, corrective and preventive maintenance materials, fabricated parts or components, permanent material installations, and direct materials (future field installations, tool crib supplies/stock, hand tools, shop stock, operations supplies, and maintenance supplies) for WRPS.

Refer to TFC-ESHQ-Q_ADM-C-01 for the graded application of TFC-PLN-02 requirements to WRPS items. The graded application of the Quality Assurance Program Description (QAPD) depends on the risk associated with the item under consideration.

1.2 Scope

This procedure defines the process for procuring items/materials including permanent material installations/engineered equipment/fabricated parts for construction activities, corrective and preventive maintenance materials, and direct work package materials.

This procedure does not define the process for procurement of the following:

- Quality Level 0 and 3 general use or field consumable materials which can be purchased via a P-Card. Refer to TFC-BSM-CP_CPR-C-01.
- Spare Parts; refer to TFC-BSM-CP_CPR-C-19 for guidance.

If a specification or catalogue ID has not been developed with sufficient detail and it is impractical to do so for one-of-a-kind engineered equipment, it can be procured using TFC-BSM-CP_CPR-C-05.

Refer to TFC-BSM-CP_CPR-C-09 for a detailed Supply Chain description.

Refer to TFC-BSM-CP_CPR-C-05 for Procurement of Services and buyer's technical representative responsibilities.

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

4.1 Develop a Bill of Materials or Material Requisition
(7.1.5.a, 7.1.5.b)

You must check each item on Attachment A "Determining Supporting Documentation" to identify documents and information that should be provided with or attached electronically to the BOM/MR.

NOTE: The following sections refer to the use of the TFMSS electronic system for development of a BOM/MR. Only under specific circumstances, when the need to procure material has been identified and TFMSS is not accessible (off-shift, weekends, or holidays, system is down), can a paper BOM/MR be used and then processed through a material coordinator.

NOTE: A BOM is used to procure items/materials including permanent material installations/engineered equipment/fabricated parts, construction activities, corrective and preventive maintenance materials, and direct work package materials.

NOTE: An MR is used when items/material are required for future field installations, tool crib supplies/stock, hand tools, shop stock, operations supplies, and maintenance supplies, as well as to track eligibility requirements for winter clothing, safety eyewear and safety shoes.

NOTE: A Field BOM may be used if GS-QL 0 material is readily available on site. The planner, with concurrence from the Manager, can develop the Field BOM and document it on the work record. Refer to TFC-BSM-CP_CPR-C-18, Section 4.2.1, for use of the Field BOM.

NOTE: Refer to Determination of Required Approvals - Items for guidance on required approvals.

Planner/Requester

1. For Work Package BOM items and materials, open TFMSS and click on the Master BOM section and review the pre-approved Master Bill of Materials list to determine if a Master BOM exists for the items being requested. (See Section 5.0 for the definition of Master Bill of Material.)

   a. If the need can be met with an existing Master BOM, proceed to Section 4.4.

   b. If the need cannot be met with an existing Master BOM, but one should be established, proceed to Section 4.3.

   c. If the need cannot be met through a Master BOM, proceed to step 2.

   NOTE: See Section 4.3 Development of a Master BOM, for description, application, and use of a Master BOM for frequently purchased spares/parts that eliminates the need to secure repeat approvals of BOMs for frequently purchased items.

NOTE: A Master BOM can be set up to document a request for spare parts withdrawn via PassPort. A simple cloned BOM triggers generation of the PassPort MR.

2. Prepare an electronic BOM/MR (as applicable) using TFMSS by clicking on BOM or MR in the "Must Select BOM or MR" box.

   NOTE: The quantity section of the BOM identifies the actual quantity of items/material to be installed. If additional items/materials are required for future installations, the additional items/materials should be identified on a separate MR and submitted to Materials. The MR should be submitted at the same time as the BOM to avoid duplicate requests being generated.

   NOTE: Include all applicable documentation per Attachment A.

   NOTE: For QL- 0/3 procured items, if the item was originally purchased on a MR with applicable approvals per Determination of Required Approvals - Items and there are no changes to the original MR catalog ID; the BOM generated to issue the item to a field work package only requires the requestor and a manager approval. Additional approvals can be acquired if manager deems they are appropriate to mitigate risk.

3. At a minimum, the following blocks should be completed (if applicable):

   - Premium Transportation – Check if overnight shipping is required.

     NOTE: If premium freight is required, a justification must be provided in the Special Instruction box and, it must be authorized by one of the following: CAM or manager.

   - Work Package Number (for BOM only).

   - CACN/COA – click on the icon and enter. (Note who is associated CAM for subsequent approval).

   - Delivery Area/location – Enter area/location and person.

   - End Use

     NOTE: Regarding BOMs, the End-Use is the Equipment Identification Number (EIN), the facility location and tank or building number, as applicable. The work package identifies the specifics regarding the work scope and detailed location.

     NOTE: Regarding MRs the "End-Use" is use of the item being ordered such as tool crib supplies, hand tools, operations supplies, maintenance supplies, etc.

- CGI – Indicate if the item is to be CGI dedicated
- Org Code – Enter five digit org code
- Priority - Enter per Attachment A of TFC-OPS-MAINT-C-01
- Suggested Vendor
- Date Required – Click on the drop down icon and indicate the date required and if it is a desired date or mandatory date
- Approvers (see step 5 below for guidance)
- Special Instructions/Emergency Justification – enter any special instruction or emergency justification if premium freight is checked
- Quantity – Enter quantity needed
- Unit – Enter unit of issue
- Quality Level (QL)
- Use a Q asterisk (Q*) in each Approval Designator block for items identified as potentially being suspect/counterfeit item.

  1) The block identified on the BOM/MR as "Special Instructions" must have the following statement:

     "Items _____, _____, and _____ to be inspected for S/CI."

- SC
- Storage Level (SL)
- Drawing/ECN/Spec# - Enter numbers if appropriate
- HAZMAT - Check if the items are hazardous (7.1.1)
- Material Safety Data Sheet (MSDS) - Check if item requires MSDS
- NRTL – Check if applicable
- Material Description

  NOTE: Descriptive information, including the salient features, characteristics and dimensions suitable for competitive

procurement and to uniquely identify this item from other similar items. When providing the description use PassPort Standard Abbreviation List. If an item contains precious metals, the type and amount must be indicated in the description. If the precious metals are greater than 1 gram, or the value is greater than or equal to $250.00, contact property management.

NOTE: For fabricated equipment, ensure the description reflects the information from the Fabrication Request (form A-6003-967 if Parsons is to do the work), as applicable.

Guidelines are:

- Separate key words with commas
- Order critical attributes according to size, material, type, rating, and color

NOTE: Place part numbers, model numbers, manufacturer name, ECN numbers, DWG numbers, etc., in the specific fields for this information.

- Additional Description (AD)
- Manufacturer – Enter the manufacturer of the item.
- Facility – Defaults to TF
- Part number or model number
- Equipment – Enter the category of the item

  NOTE: If the equipment to be leased is a trailer or similar type facility/structure, complete Site Evaluation Form (A-6001-152) and obtain approval of the Site Planning Board before proceeding.

- Estimated unit cost – Enter estimated cost per unit
- Cat/P-Card/Fab ID – Click to find an existing catalogue or P-Card item
- Comments – Enter any relevant comments.

4. If the approval designator, quality assurance level (QAL), safety class (SC), and storage level of the item are known, specify it on the electronic BOM/MR; if it is not known, obtain Engineering support to determine applicable quality levels.

   NOTE: WRPS Quality and the correlating PassPort Quality Level Codes are listed below (refer to TFC-ENG-DESIGN-P-28 and TFC-ESHQ-Q_ADM-C-01):

WRPS Quality Assurance Level	TFMSS Quality Level	Safety Code *
Commercial	QL-0	General Service
Enhanced	QL-3	General Service
Full	QL-1 or QL-2 **	General Service Safety Significant Safety Class

   *Safety Code is equal to that assigned to the system that the component is to be installed into.

   Items designated Full Quality can be procured either as QL-1 or QL-2 – the end results are identical – either the supplier is an evaluated supplier or the item goes through a commercial grade item dedication process. **All safety significant SSCs, regardless of assigned Quality Assurance Level (QAL), shall be procured as QL-2. Commercial Grade Item dedication is required for all safety significant SSCs not procured from an evaluated supplier.

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5. Assign a responsible manager and engineer (for QL 1, 2, and 3 items) in the applicable blocks by using the blue down arrow, highlighting, and clicking on the name of the appropriate manager or engineer.

6. Contact the WRPS Hoisting and Rigging Committee and Rigging Engineer to assign an appropriate Equipment Custodian if procurement of this item will involve hoisting and rigging materials. Contact with the Equipment Custodian is required to allow sufficient time to coordinate all activities required to receive the item.

7. Save the BOM/MR, and if prompted, click ok to save the BOM/MR.

8. Open the BOM/MR under the working tab and forward the request to the Responsible Manager and Engineer for further processing.

   a. To accomplish this, use the blue down arrow next to the "B.O.M. Status block," highlight and click manager or Engineer as applicable.

   b. If prompted, click ok to move the BOM/MR forward.

Responsible Manager

9. Review and approve or return the BOM/MR.

   NOTE: Some BOMs do not require manager approval.

10. Ensure that information or specifications divulged to prospective bidders can be released to the public and do not include Sensitive Unclassified Information (SUI). Refer to TFC-BSM-IRM_DC-C-03 for additional guidance on information clearance requirements and to TFC-BSM-IRM-STD-03 for identification guidance.

Responsible Engineer

11. Review the BOM/MR and, as necessary, add applicable requirements to ensure that the material description and procurement requirements, defined in a graded approach, are correct for the end use.

    Include the following items as appropriate:

    - The intended use of the item or service.
    - The requirement for the supplier to impose appropriate technical and quality assurance program requirements, including inspection criteria, on sub-tier suppliers through their procurement documents.
    - Documentation required to be submitted by the supplier for information, review, or approval by the purchaser. Where relevant a schedule should be provided.
    - The requirement for purchaser (or designated representative) right-of-access to the supplier's facilities and records for inspections, assessments, and audits related to the procurement
    - Provisions for establishing any needed hold points beyond which work cannot proceed without purchaser authorization
    - Identification of equipment lifting requirements including design of lift points, design verification, and any special lifting apparatus
    - Identification of appropriate spare and replacement parts or assemblies and the appropriate delineation of the technical and quality assurance related data required for ordering these parts or assemblies

      NOTE: Evaluate the potential need for spare equipment that could fail prematurely, especially long lead delivery or items not readily available from the vendor. Obtain a list of recommended spares with estimated delivery lead times to enable a technical evaluation of critical spares depending on cost, schedule, and project risk. The engineer is responsible for obtaining and documenting recommended spares and evaluation performed.

- Shelf life requirements.

  NOTE: Determine from the vendor if any items or components within equipment assemblies (e.g., "O" rings, drives belts) are subject to shelf life limitations. Establish the shelf life expressed in months or years. Distinguish between "storage only" shelf life and "in service field use" shelf life, if there is a difference. Shelf life information and storage conditions for items designated "Full Quality" shall be documented in the material description block.

- Identification of the information required from the vendor, if any, including operating manuals, maintenance manuals, one-line diagrams, and drawings. Ensure the required vendor information and number of copies of each item needed is described.

12. Ensure the Quality attributes for items/materials being procured is correct.

    a. Consult the Work Management System (WMS) Asset/Equipment database, or

    b. Ensure the appropriate Quality attributes have been applied for the items/materials being procured, in accordance with RPP-RPT-29160 and the applicable Commercial Grade Item Upgrade Dedication form (A-6002-544) (for Safety Significant Systems) and/or TFC-ESHQ-Q_ADM-C-01, as applicable.

    c. Record Quality in WMS Asset/Equipment Database in accordance with TFC-ENG-FACSUP-C-23, if the item is identified with an Equipment Identification Number (EIN).

       - AD: Enter approval designator
       - SC: Enter safety class
       - SL: Enter storage level.

13. Specify technical requirements by reference to specific drawings, specifications, codes, standards, regulations, procedures, or instructions, including revisions thereto, that describe the items or services to be furnished.

    NOTE 1: National codes, standards, and WRPS standards may be needed for reference as requirements. Refer to TFC-ENG-DESIGN-D-13.2 for guidance.

    NOTE 2: If technical information is to be provided to the potential supplier, a determination must be made if the information meets Export Controlled Information (ECI) requirements. ECI distribution must be restricted to prevent unauthorized release to foreign countries, organizations, or foreign nationals. Recipients of ECI are required to complete and sign an ECI Non-Disclosure form. Refer to TFC-BSM-IRM-STD-03 for guidance.

14. Coordinate with Materials to determine if the item/material may already be available on site.

    a. If the item/material is available, proceed to step 17 and evaluate commercial grade upgrade dedication requirements.

    b. If the item/material is **not** available, proceed next step.

15. Determine appropriate QA Clauses for each line item if any of the items/materials being procured are QL 1, 2, or 3.

    a. Consult the WMS Asset/Equipment database or

    b. Identify appropriate QA Clauses in accordance with the Procurement Quality Clause listing on the Hanford Internet (http://www5.rl.gov/rapidweb/procweb/index.cfm?PageNum=26)

    c. Record QA Clauses in WMS Asset/Equipment database as attachments.

        1) Ensure material requirements are specified to preclude the purchase or introduction of a suspect/counterfeit item (S/CI). Refer to TFC-ESHQ-Q_C-C-03 for guidance.

        2) Determine testing and inspection requirements with associated acceptance criteria, utilizing the approved test plan developed for the project (if applicable).

16. Ensure that all QL-0, 1, 2, or 3 electrical equipment procured or designed to be installed within or on WRPS managed facilities or projects shall comply with NFPA 70, TFC-ESHQ-S-STD-03, and TFC-ESHQ-S_SAF-C-09.

17. Assign appropriate storage level on BOM/MR in accordance with TFC-BSM-CP_CPR-C-18 to maintain the integrity of the stored items for future tank farm installations.

    NOTE: Assignment of storage level is required for all items procured and/or placed in inventory for later installation in tank farms structures, systems, and components.

    a. Identify any protective measures or cleanliness requirements required to maintain the quality of stored materials, including the use of containers, contact preservatives, valve opening covers, and vapor barriers with desiccants.

    b. Identify any preventive maintenance requirements that must be performed on stored equipment.

18. Identify test and inspection requirements with associated acceptance criteria utilizing the approved test plan developed for the project if applicable.

19. If the item is designated as Enhanced Quality (QL-3) or Full Quality (QL-1 or 2), develop a QA Inspection Plan (QAIP), with assistance from Quality Assurance, defining inspection/verification requirements and acceptance criteria. For fabricated equipment, the QAIP must reflect the inspection and green-tagging requirements from the Fabrication Request, as applicable.

    NOTE: Identify the type of inspection (such as source inspection, receipt inspection, etc.) when using the TFMSS electronic QAIP.

Field Code Changed

Field Code Changed

Field Code Changed

20. Determine if the items/materials require commercial grade dedication for use in safety application. Refer to Section 4.5 for guidance.

    a. For each item requiring commercial grade item dedication, use a Q asterisk (Q*) in each Approval Designator block.

    b. Ensure the block identified on the BOM as "Special Instructions" have the following statement for items to be accepted by the commercial grade item dedication process:

       "Items _____, _____, and _____ to be dedicated per CGI # _____"

21. Approve BOM/MR and refer to Determination of Required Approvals - Items to determine the additional appropriate approvals for the Route List.

    a. To populate the Route List, click the blue down arrow and highlight the applicable organization, individual or title, as appropriate.

    b. Approve the BOM by using the "B.O.M. Status block." If prompted, click ok to move the BOM forward. Proceed to next step.

Quality Assurance

22. Ensure that appropriate safety classification and quality requirements are included in procurement documents, including provisions that ensure proper quality assurance program controls are applied to all sub-tier suppliers and contractors.

23. If any discrepancies are identified in this step, or steps 22 and 23, return the BOM/MR to the responsible engineer or requester for resolution. Following resolution of any issue(s) and re-approval by engineering, proceed with review and approval of the BOM/MR, as appropriate.

24. Verify that the correct QA clauses have been designated for each item on the BOM/MR requiring receipt inspection.

25. Ensure that appropriate acceptance criteria, including inspections or other verifications, are properly applied in procurement documents and the QAIP, as required.

26. For Full Quality (QL 1 or 2) or Enhanced Quality (QL 3) items, assist Engineering in developing a QAIP, for critical attributes that require inspection. Include the applicable inspection requirements and any other verification requirements.

27. Approve the BOM/MR as required by Determination of Required Approvals - Items. Use the blue down arrow next to the "BOM/MR Status block" and highlight and click MCM. If prompted, click "ok" to move the BOM/MR forward.

Materials

28. Review the BOM/MR for completeness.

    NOTE: If materials are on the S/CI list ensure that a Q asterisk (Q*) is included on the BOM/MR. For items/materials that are Quality Level 3 and above the B-76 clause should be used.

    a. If significant changes are requested or necessary, provide the following information when returning the BOM/MR to the requestor/engineering:

        1) Indicate what needs to be changed, why, and who requested the change.

        2) Notify the requester, engineer, and QAE (at a minimum) of the same information (include BOM/MR number) via e-mail message.

        Examples of significant changes would be:

        - Safety class change
        - Quality level change
        - QAIP change
        - QA clause change
        - Changing a valid part number to another valid part number
        - Drawing/ECN/specification changes.

b. If incidental changes are requested or necessary, provide the following information when returning the BOM/MR to the requestor/engineering:

1) Indicate needs to be changed, why, and who requested the change in the Returned section of the BOM/MR.

2) Notify the requester and the engineer (at a minimum) of the same information (include BOM/MR number) via e-mail message.

Examples of incidental changes would be:

- Spelling errors
- Quantity changes
- Typographical errors in the part number, but not changing a valid part number to another valid part number
- Typographical errors in the description
- Storage level
- An obsolete part number being changed to the current part number.

29. Determine if the item/material is currently available/on hand by checking the TFMSS search tool inventory which includes PassPort, TFMSS, Central Stores, and 2101-HV. Access database material.

NOTE: Quality 1, 2, and 3 materials that are on hand can be downgraded and utilized to fill Quality – 0 orders by adding a note to BOM/MR indicating "Item was issued as non-quality level and all markings and tags have been removed."

a. If the item/material is available on site, identify the location and obtain from the identified location in accordance with TFC-BSM-CP_CPR-C-18 or TFC-BSM-CP_CPR-C-19.

b. If the required material is available from the general supplies inventory, identify location on the TFMSS BOM/MR.

c. If the required material is **not** available from the general supplies inventory but is a Commercial Quality (QL 0) procurement, proceed to step 33 to determine if material can be procured using a P-Card.

d. If the item/material is **not** available in inventory, proceed to step e.

e. Review the link below for excess property available from other complex-wide government agencies or prime contractors.

- GSAXcess® (http://www.gsaxcess.gov.)

f. To gain access to GSAXcess® to search for available property, complete the GSAXcess Form, Attachment B, and transmit to the Manager, Procurement Services, for approval. Once approval is obtained, you may register online at the login page, http://www.gsaxcess.gov. Once access to the GSAXcess ®site has been obtained, request the Activity Address Code (AAC) from the Manager of Procurement Services.

g. Consider the following when acquiring excess property:

- There must be an authorized requirement.
- The cost of acquiring and maintaining the excess personal property (including packing, shipping, pickup, and necessary repairs) does not exceed the cost of purchasing and maintaining new material.
- The sources of spare parts or repair/maintenance services to support the acquired item are readily accessible.
- The supply of excess parts acquired must not exceed the life expectancy of the equipment supported.
- The excess personal property will fulfill the required need with reasonable certainty without sacrificing mission or schedule.
- You must not acquire excess personal property with the intent to sell or trade for other assets.

1) If desired item/materials/property is located within the GSAXcess web site, proceed through the process provided on the web site of selecting and requesting said item, and generating the Transfer Control Number. Identify the location on the TFMSS BOM/MR.

2) If the material is **not** available from any of the above sources, proceed to next step.

30. Determine if the item is to be leased from the vendor rather than purchased.

    a. If the item is to be leased from the vendor, prepare an itemized list of the equipment. Continue with next step.

       NOTE: Prior to leasing (or renting) equipment, contact Facilities & Property Management to ascertain whether the equipment is already available internally or whether it is available from another government/prime contract source. (Refer to TFC-BSM-FPM_PR-C-01 for tagging guidance.)

    b. If the item is to be purchased rather than leased, proceed to step 34.

31. Submit the itemized equipment list to the Procurement Specialist.

Procurement Specialist

32. Review the equipment list.

    a. If acceptable, complete an Equipment Bailment Agreement form (A-6003-477) and include the equipment list as an attachment to the Equipment Bailment Agreement. Proceed to next step.

       NOTE: The Equipment Bailment Agreement applies only to loaned or leased equipment. Only the procurement specialist is authorized to obtain a vendor signature on an Equipment Bailment Agreement.

    b. If not acceptable, the loan/lease cannot be made. Contact the requester and Materials for direction.

33. Notify Materials that the item in question may be obtained through the above process.

Materials

34. Determine if procurement can be accomplished via a P-Card using TFC-BSM-CP_CPR-C-01, including Attachment A, WRPS P-Card Prohibited Items List.

    a. If the item can be purchased with a P-Card, exit this procedure and make required purchase in accordance with TFC-BSM-CP_CPR-C-01. Refer to e-Store Marketplace website for a complete list of commodities that can be purchased via on-line ordering. Purchase is complete.

    b. Document the P-Card log number on the TFMSS Electronic BOM.

       NOTE: When material is received in the field, refer to TFC-BSM-CP_CPR-C-18 for direction.

c. If the item **cannot** be purchased with a P-Card, proceed to next step.

35. If item(s) being procured are Full Quality (QL 1 or 2) or Enhanced Quality (QL 3), verify that a QAIP has been provided; if a QAIP has not been provided, return the BOM/MR to the responsible engineer for further direction.

36. Obtain estimated cost of the items (material) identified.

37. Forward the TFMSS Electronic BOM/MR to be signed if additional approvals are required.

38. As applicable, generate a Material Request (MR) in PassPort (refer to PassPort System User's Guide Portal/J, PassPort 9 Training).

    a. Include the following statement in the MR: "The offering of the item is evidence of the supplier's verification that all procurement requirements have been satisfied."

    b. Enter the CGI dedication number, if applicable, in the PassPort Notes area.

39. Electronically attach the authorizing procurement documents (TFMSS Electronic BOM/MR): (7.1.3)

    NOTE: Ensure any special instructions and/or emergency justification identified in the TFMSS BOM/MR are incorporated and/or linked in the purchase requisition(s), as applicable.

    a. Click report tab in TFMSS.

    b. Click BOM/MR; BOM/MR is located on green bar in white letters under tabs.

    c. Enter Work Package and click search.

    d. Click and open BOM/MR.

    e. Click Address bar to highlight.

    f. Right click.

    g. Highlight and click copy.

    h. Open the PassPort word document and paste link in desired location.

    i. Highlight the pasted address and right click.

j. Click and select Hyperlink.

NOTE: The insert Hyperlink page must show the address on bottom and top of page to connect the link. If the addresses match and are present click ok. If the addresses are blank or incorrect, paste in address and click ok.

40. Submit the PassPort MR and obtain the approval of the Materials Manager via PassPort if dollar value is greater than your PassPort approval authority.

41. Verify by independent review that the information entered into PassPort MR is consistent with BOM/MR request source document.

42. Ensure procurement documentation and files are maintained to support WRPS requirements.

43. Monitor the MR via PassPort

    a. If approved, proceed to Section 4.3 "Acquire Item."

4.2 Acquire QL 1-3 Items
(7.1.5.b)

Procurement Specialist

1. Receive notification in PassPort to process the Purchase Requisition.

2. Ensure that Quality Assurance clauses and other QA requirements, as specified in the purchase requisition, are included in the Purchase Order.

3. Develop a solicitation in accordance with TFC-BSM-CP_CPR-P-02.

4. Make the selection and award in accordance with TFC-BSM-CP_CPR-P-03.

   NOTE: For procurement of items designated as Full Quality (QL 1 or 2) items, ensure that the proposed vendor/supplier is on the Evaluated Supplier List (ESL) for the appropriate criteria, unless the item can be procured commercial grade as determined by Engineering (indicated on catalog ID).

   NOTE: The process for evaluation of suppliers being considered for inclusion on the Fluor Hanford ESL is defined in HNF-PRO-3144, "Supplier Quality Assurance Program Evaluation."

   a. If the proposed supplier is **not** on the ESL, inform Engineering and the Quality Assurance Engineer, and request further direction, i.e., evaluate vendor/supplier for inclusion on the ESL (refer to TFC-ESHQ-Q_ADM-C-09) or for a change in requirements.

b. Acquire Acquisition Verification Services (AVS) approval of Full Quality (QL 1 and/or 2) items that are not upgraded in accordance with the commercial grade item upgrade dedication process.

c. If AVS approval is not required or the item(s) is upgraded in accordance with the commercial grade item upgrade dedication process, proceed to the next step.

5. Document Price Reasonableness for orders greater than $3,000.

6. If progress payments or restocking charges are required after an award is in place, initiate an "administrative" MR to add a line item to the Purchase Requisition to allow for this type of payment/charges.

   NOTE: An administrative MR such as this would not require formal reviews/approvals as identified in the Determination of Required Approvals - Items.

7. Receipt of items is conducted in accordance with TFC-BSM-CP_CPR-C-18.

Quality Control

8. Upon receipt of a Non-Conformance Report (NCR) or supplier generated corrective action report on a quality level 1 or 2 procurement generate a PER to initiate screening for PAAA applicability.

4.3 Development of a Master Bill of Materials (BOM)
(7.1.5.b)

The following sections refer to the use of TFMSS for development of a Master BOM with specific Catalog ID attributes. A Master BOM may be used for ordering frequently used spares parts or items (e.g., AMS-3, AMS-4 CAM parts). The benefit of the Master BOM is to get the required approvals on the Master BOM for all the needed parts once and then generate cloned BOMs tied back to the Master BOM without requiring repeated Technical review and approvals. The cloned BOM requires only the requestor's approval and is automatically submitted to Materials for assignment and processing.

NOTE: To set up frequently used parts as formal spares, refer to TFC-BSM-CP_CPR-C-19.

NOTE: A Master BOM Catalog ID cannot be altered when utilized. If alteration is required a new Master BOM must be created.

Planner/Requester

1. Open the Master BOMs section of TFMSS to review the pre-approved Master Bill of Materials list to determine if a Master BOM exists for the items being requested. (See Section 5.0 for the definition of a Master Bill of Materials.)

   a. If a Master BOM already exists, go to Section 4.4 to clone a Master BOM.

b. If a Master BOM does not exist, create a Master electronic Bill of Materials using the TFMSS electronic BOM per the following steps.

2. Open TFMSS and click on BOM in the must select BOM or MR box.

3. Leave action as "New" and check the box "Master BOM."

4. Complete the Master BOM exactly as a standard BOM (refer to Section 4.2), with the following exceptions:

   a. Place the following note in the special instructions/emergency justification field. This statement is necessary to be carried through to the cloned BOM to record the approvals. (See Section 5.0 for the definition of a cloned BOM.)

      NOTE: As defined in TFC-BSM-CP_CPR-C-06, the Engineering and Quality Assurance approvals for this Bill of Material are located in Master BOM number xxxxxx and are not required to be obtained for each BOM created under the aforementioned Master BOM.

   b. Leave the quantities for each item on the Master BOM set to zero. This is important for the cloned BOM to be able to automatically delete the line items that will be left at zero when saving the cloned BOM.

      NOTE: Contact your material coordinator when setting up a Master BOM to make sure the correct Catalog ID's/TFMSS part numbers and storage locations are identified. This is very important to maintain part availability.

5. Route the Master BOM for review and approval in accordance with Determination of Required Approvals - Items.

Responsible Engineer

6. Review the Master BOM and, as necessary, add applicable requirements to ensure that the material description and procurement requirements, defined in a graded approach, are correct for the end use. (Refer to Section 4.2 under Responsible Engineer for further guidance.)

Quality Assurance

7. Review the Master BOM and ensure that appropriate safety classification and quality requirements are included in procurement documents, including provisions that ensure proper quality assurance program controls are applied to all sub-tier suppliers and contractors. (Refer to Section 4.2 under Quality Assurance for further guidance.) Upon completion of review and concurrence, approve the Master BOM.

   NOTE: If any discrepancies are identified, return the BOM to the Responsible Engineer or Requester for resolution.

8. Upon completion of review and concurrence, approve the Master BOM. The Master BOM is now ready for use to create a cloned BOM.

4.4 Cloning a Master BOM
(7.1.5.b)

Planner/Requester

1. Open the Master BOM section in TFMSS and select the Master BOM to be cloned and open it. Click on the down arrow next to action (in the upper left hand corner) and select clone. A response required dialog box will open asking if you wish to create a clone of the Master BOM, click yes.

   NOTE: Once the Master BOM is cloned, all of the information from the Master will be carried forward to the clone.

2. On the Clone, input the work package number and verify that the rest of the header information is correct and/or filled out.

   NOTE: **Do not** change the statement in the Special Instructions/ Emergency Justification box.

3. Input the quantity for the line items that need to be ordered.

   NOTE: Line items in which the quantity is left zero will automatically delete once the cloned BOM is saved.

4. Approve the cloned BOM and route to Materials for assignment and processing.

Materials

5. Determine if the item/material is currently available on site by checking the PassPort spare parts inventory.

   a. If the item/material is available on site, identify the location and obtain from the WRPS warehouse(s) in accordance with TFC-BSM-CP_CPR-C-18 or TFC-BSM-CP_CPR-C-19.

   b. If the item/material is **not** available in inventory, proceed to step 6.

6. Obtain estimated cost of the items (material) identified.

7. Generate a Material Request (MR) in PassPort and include the following statement in the MR: "The offering of the item is evidence of the supplier's verification that all procurement requirements have been satisfied."

8. Obtain approvals from CAM (if over $10K) and Materials Manager and route to Procurement Construction and Materials Lead for purchasing. Premium freight requires the approval of one of the following: CAM or manager.

9. Verify by independent review that the information entered into PassPort MR is consistent with BOM/MR request source document.

10. Proceed to Section 4.3.

4.5 Commercial Grade Items

Responsible Engineer

1. **For Safety Significant SSCs with a QAL designation of Full Quality, Enhanced Quality, or Commercial Quality not procured from an evaluated supplier**, it shall be demonstrated as suitable for use in its intended application. In accordance with TFC-PLN-03, this requires a documented engineering evaluation to establish and verify critical characteristics before the item is relied on for operation. Critical design characteristics and appropriateness of the item for use shall be verified (e.g., inspection, testing). Refer to TFC-ENG-DESIGN-C-15 for the commercial grade item dedication process.

2. If "existing" **General Service (GS) items with a QAL designation of Enhanced Quality and Commercial Quality not procured from an evaluated supplier** will be installed **as Safety Significant SSCs**, upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. For commercial grade items (QL-0), generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance manager.

   c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

      NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

   d. Complete the upgrade via the commercial grade item upgrade process. Refer to TFC-ENG-DESIGN-C-15 for requirements to upgrade materials.

   NOTE: This is not intended to allow procurement of material as commercial items to bypass the normal procurement process but is intended to allow prudent use of existing material through an evaluation process to support use in higher quality level applications.

3. If "existing" commercial grade items (QL-0) will be installed in an General Service (GS) application requiring Enhanced or Full Quality (QL-1, 2, or 3) designation, upgrade that material in accordance with the following:

   a. If applicable, generate a QAIP specifying the inspection criteria by which the item shall be evaluated.

   b. Generate an upgrade letter referencing the QAIP and obtain approval by the WRPS Chief Engineer and by the Quality Assurance Manager.

   c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

   NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

5.0 DEFINITIONS

Cloned BOM. A cloned BOM is created to procure items from a master BOM. Only the Quantity field can be changed. No additional items can be added to a cloned BOM. Technical approvals do not have to be obtained as they are transferred from the master BOM.

General use materials. Items such as office supplies (E-Store), office equipment (i.e., ADP equipment, telephones and accessories, fax machines, shredders, calculators), books, locks/keys, furniture, Franklin Planners.

Item. An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, unit, or support systems.

Public. Any person, organization, company, or foreign country having an interest in information concerning Tank Operations Contractor (TOC) activities, but not having a specific contract or agreement, which obligates them to protect the information. This category includes federal and state agencies, congress, the judicial system (the courts), media, foreign nations or for foreign exchange purpose, or prepared by foreign national assignees.

Master Bill of Materials (BOM). A master BOM may be generated for ordering spare parts already established in the WRPS Spare Parts program with a catalog ID set to Ready status (having the appropriate Engineering, QA and Materials approvals). By creating a Master BOM, with all of the required approvals, when a clone of the master BOM is created no additional technical approvals will be required in the approval process of the cloned BOM.

All of the line item fields in a cloned BOM are fixed and cannot be changed; the only exception is the quantity field. No additional lines can be added nor can any changes be made to the safety class, quality level etc. Because of the configuration control of the master BOM process, the technical approvals on the master BOM are sufficient and no additional technical approvals are required on the clone from an approved master BOM.

Sensitive Unclassified Information. SUI does not define a specific set of restrictions. SUI is any information, regardless of its physical form or characteristics, which has been determined to have relative sensitivity, requires mandatory protection because of statutory or regulatory restrictions or for which disclosure, loss, misuse, alteration, or destruction could adversely affect national security, government, or private interests. National security interests are those unclassified matters that relate to the national defense or foreign relations for the U.S. government. Governmental interests are those related, but not limited, to the wide range of government or government-derived economic, human, financial, industrial, agricultural, technological, and law enforcement information, as well as privacy or confidentiality of personal or commercial proprietary information.

Unauthorized procurement. An unauthorized procurement occurs when acquisition policies are not followed and/or commitments are made, items are purchased or contractors directed to start work by personnel who are not authorized to do so. When commitments are made on behalf of WRPS without authority or outside the standard acquisition processes, a ratification justification and approval must be prepared and submitted by the (person/staff/end user/ organization) creating that commitment.

Vital safety system. Safety-class systems, safety-significant systems, and systems that perform an important defense in depth safety function. Vital safety systems that perform important defense in depth functions are those that fall below the threshold for classification as safety-class or safety-significant, but perform an active function that within the context of the Authorization Basis, and in the judgment of the Chief Engineer, performs an important role to protect the public, worker, or the environment.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Equipment Bailment Agreement (A-6003-477)	N	N	N/A	ADM-17.28a	N/A	Procurement Services
Noncompetitive Justification	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services
Tank Farm Material Services System BOM or MR	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services
Acquisition Planning Document (APD) form (A-6003-485)	N	N	N/A	ADM-3.3.a1a	N/A	Procurement Services

The identified record custodian is responsible for record retention and retirement in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. 10 CFR 851.22 (c), "Hazard Prevention and Abatement."

2. Prime Contract DE-AC27-08RV14800, Clauses C.2, "Management Workscope."

3. RPP-8411, "Procurement Process Description," Section 5.1.3, "Alternate Procurement Methods."

4. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor."

5. RPP-PLAN-39433, "Procurement, Construction, and Acceptance Testing Plan."

    a. Section 3.1, "Procurement Bid and Work Packages (Purchase Orders)."
    b. Section 3.2, "Construction Bid and Work Packages (Subcontracts)."

6. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. HNF-PRO-3144, "Supplier Quality Assurance Program Evaluation."

2. RPP-RPT-29160, "Methodology for Equipment Safety Classification and QA Level Determination."

3. TFC-BSM-CP_CPR-C-01, "Purchasing Card (P-Card)."

4. TFC-BSM-CP_CPR-C-02, "Noncompetitive Procurement Justification."

5. TFC-BSM-CP_CPR-C-05, "Procurement of Services."

6. TFC-BSM-CP_CPR-C-09, "Supply Chain Process."

7. TFC-BSM_CP-CPR-C-15, "Capitalization Determination."

8. TFC-BSM-CP_CPR-C-18, "Material Receipt, Storage, Issuance, Return, and Excess Control."

9. TFC-BSM-CP_CPR-C-19, "Controlling Spare Parts and Spare Equipment Inventory."

10. TFC-BSM-CP_CPR-P-02, "Solicitation Process."

11. TFC-BSM-CP_CPR-P-03, "Selection and Award."

12. TFC-BSM-FPM_PR-C-01, "Property Management."

13. TFC-BSM-HR_EM-C-05, "Plant Forces Work Review (Davis-Bacon Act Compliance)."

14. TFC-BSM-HR_EM-C-07, "Work Turndown Process."

15. TFC-BSM-IRM_DC-C-02, "Records Management."

16. TFC-BSM-IRM_DC-C-03, "Information Clearance."

17. TFC-BSM-IRM-STD-03, "Unclassified Information Identification Standards."

18. TFC-ENG-DESIGN-C-15, "Commercial Grade Item Upgrade Dedication."

19. TFC-ENG-DESIGN-C-34, "Technical Requirements for Procurement."

20. TFC-ENG-DESIGN-D-13.2, "Guidance for Applying Engineering Codes and Standards to WRPS Statements of Work."

21. TFC-ENG-DESIGN-P-28, "Ventilation System Quality Assurance Level Determination."

22. TFC-ENG-FACSUP-C-23, "Equipment Identification and Data Management."

23. TFC-ESHQ-ENV-STD-02, "Regulated Substance Abuse."

24. TFC-ESHQ-IH-STD-04, "Asbestos Control – Facility Management/General Industry."

25. TFC-ESHQ-IH-STD-11, "Carcinogen Control."

26. TFC-ESHQ-Q_ADM-C-01, "Graded Quality Assurance."

27. TFC-ESHQ-Q_ADM-C-02, "Nonconforming Item Reporting and Control."

28. TFC-ESHQ-Q_ADM-C-09, "Supplier Quality Assurance Program Evaluation."

29. TFC-ESHQ-Q_C-C-03, "Control of Suspect/Counterfeit Items."

30. TFC-ESHQ-Q_INSP-C-01, "Control of Inspections."

31. TFC-ESHQ-Q_INSP-C-04, "Inspection and Test Status Indicators."

32. TFC-ESHQ-S_IH-C-47, "Chemical Management Process."

33. TFC-ESHQ-S_SAF-C-09, "NRTL Requirements for Electrical Equipment."

34. TFC-ESHQ-S-STD-03, "Electrical Safety."

35. TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."

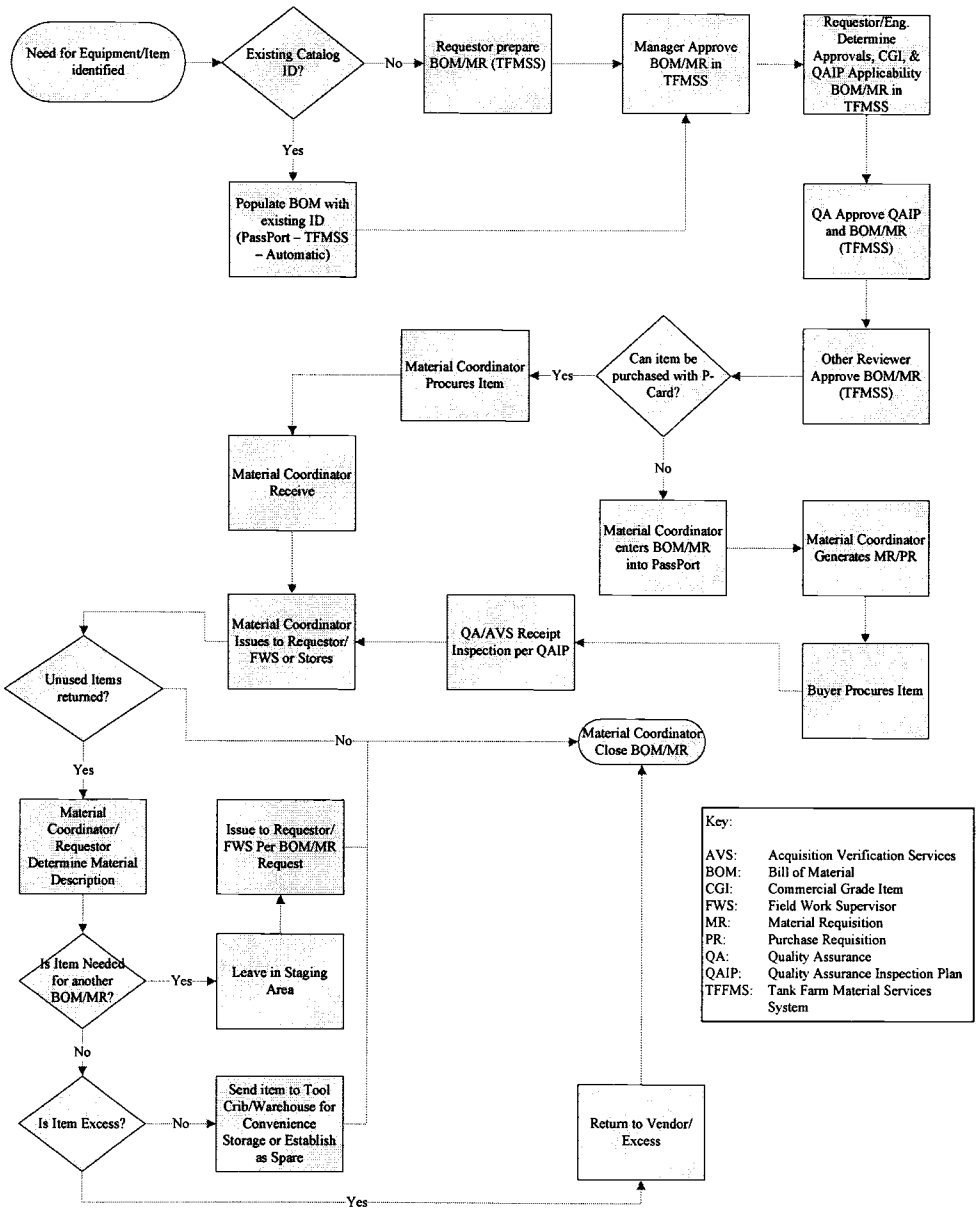
36. TFC-PLN-03, "Engineering Program Management Plan."

37. TFC-PLN-26, "Testing Program Plan."

38. TFC-PLN-58, "Chemical Management Plan."

39. TFC-PRJ-SUT-C-01, "Test Plan Preparation."

Figure 1. BOM/MR Request Process.



ATTACHMENT A - DETERMINING SUPPORTING DOCUMENTATION

Determination Statement	**Action**
1. Is an Acquisition Planning Document (APD) required? See TFC-BSM-CP_CPR-C-05	Refer to the APD Instructions to complete the form.
2. Is this a need to document procurement of an item/material already received?	Complete Unauthorized Procurement justification (see TFC-BSM-CP_CPR-C-05 for instructions.
3. Is the item/material a carcinogen or a controlled compound?	Review and comply with TFC-ESHQ-IH-STD-11 then complete BOM/MR.
4. Does the item/material contain hazardous material (PCBs or asbestos)?	Review and comply with TFC-PLN-58 and TFC-ESHQ-IH-STD-04, then complete BOM/MR.
5. Does the item/material contain an ozone depleting substance (i.e., refrigerants)?	Review and comply withTFC-ESHQ-ENV-STD-02, then complete BOM/MR.
6. Does the item involve engineered and/or fabricated parts or components and include construction or fabrication that could be completed by Hanford Atomic Metal Trades Council (HAMTC) per TFC-BSM-HR_EM-C-05?	Determine if this work will be submitted for a Plant Forces Work Review (PFWR), if **not**, include a statement with justification with the BOM/MR per TFC-BSM-HR_EM-C-05
7. Does the item involve engineered and/or fabricated parts or components that require the work be submitted for a Plant Forces Work Review (PFWR)?	Provide the PFWR No. on the BOM/MR and a statement indicating the work was submitted for a PFWR and that plant forces **cannot** perform the work. Submit a Work Turndown Check Sheet with the BOM/MR in accordance with TFC-BSM-HR_EM-C-07. If the Plant Forces can perform the work, exit this procedure and refer to TFC-BSM-CP_CPR-C-05 and TFC-OPS_MAINT-C-01 to secure the work.
8. Does the item involve engineered and/or fabricated parts or a component that represents a change to work HAMTC initially turned down, such as delivery schedule and scope changes, and **hasn't** been awarded?	Obtain Labor Relations review and agreement before proceeding. Labor Relations will solicit HAMTC feedback (may require a new formal turndown). Proceed with the change to the BOM/MR and reference the PFWR in the comments. Labor Relations will notify the requestor no later than two work days after request if a turndown meeting is not required, or agreement/recommendation after the formal turndown meeting. NOTE: Formal turndown meetings should be scheduled less than one week after a request to Labor Relations.

ATTACHMENT A – DETERMINING SUPPORTING DOCUMENTATION (cont.)

9. Does the item involve engineered and/or fabricated parts or components that have been awarded and were turned down by HAMTC?	Notify Labor Relations and proceed with the change and reference the PFWR in the comments.
10. Is the item/material part of a Davis-Bacon covered project where the item/material is being ordered by the construction subcontractor and will be installed by Building Trades crafts?	The subcontractor will order the material and coordinate its receipt and inspection. If WRPS is providing government furnished equipment (GFE) and has not signed the Hanford Site Stabilization Agreement, and the equipment is not a requirement in the subcontract, then the requestor may use the BOM/MR process with Materials involvement, or may request the material directly via a MR in PassPort.
11. Is the item/material part of a Davis-Bacon covered construction project where the item/material is being provided by WRPS as government furnished equipment (GFE) and WRPS is not signatory to the Hanford Site Stabilization Agreement	The ordering of items/material is neither HAMTC nor Building Trades. The requestor may choose to use the BOM/MR process via Materials or may request the material directly via a MR in PassPort. If the requestor chooses to request material directly (without Materials Involvement) then the requester is directly responsible for ensuring material is requested with appropriate approvals (Determination of Required Approvals - Items) and received, stored and inspected appropriately. See TFC-BSM-CP_CPR-C-18. NOTE: If the requester chooses to request material directly, he/she must follow the process described in Section 4.1 but document it in PassPort on a Material Request; he/she will be performing the responsibilities of the planner/requester and Materials throughout Section 4.1
12. Is this is a noncompetitive procurement of an item/material?	Develop a noncompetitive justification in accordance with TFC-BSM-CP_CPR-C-02 and submit with BOM/MR.
13. Is a mandatory source required per Mandatory Source Checklist Screening Tool? A mandatory source is one that must be used due to existing DOE, Site or Company agreements.	Submit Mandatory Source Checklist Screening Tool with BOM/MR.
14. Does the proposed acquisition include material identified by Executive Order 13423 or DOE Order 450.1A which requires using recycled materials when possible?	Specify on the BOM/MR that the materials to be acquired must contain recovered materials to the minimums currently specified.

ATTACHMENT A – DETERMINING SUPPORTING DOCUMENTATION (cont.)

15. Is a capitalization determination required per See TFC-BSM-CP_CPR-C-15?	Contact WRPS Controller to request a capitalization plan.
16. Is this a Davis-Bacon covered construction project that has been cancelled or delayed more than 90 calendar days?	The care and custody of project equipment and materials, regardless of how they were acquired or what process was used to obtain them, must be managed per TFC-BSM-CP_CPR-C-18.
17. Is the procurement for prescription safety glasses, safety shoes, or winter clothing?	Exit this procedure and proceed to TFC-BSM-CP_CPR-C-01 for guidance.

ATTACHMENT B – GSAXCESS™ FORM (Revised DOE Format)

Complete this form to obtain a GSA Password/Access Code to use GSAXcess, formerly Federal Excess Disposal System (FEDS). Send the completed application to your Organizational Property Management Officer (OPMO) who will review, approve and forward it to the National Utilization Officer in the Office of Resource Management.

Required Information

(Please print legibly)

Name Telephone Number Fax Number

Agency Name – U.S. Department of Energy

Field Office/Contractor Name WRPS

Complete Mailing Address _____

_____

_____

_____

E-Mail Address _____

Agency/Bureau Code Activity Address Code

Permission Levels: (Please Check All That Apply)

Search Only _____

Search/Select _____

Transfer _____

Report Property _____

Approved: (OPMO) _____

***ALL CHANGES, ADDITIONS/DELETIONS MUST BE REPORTED TO NUO** (REVISED 10/23/03)*

Task# WRPS-PER-2008-0279.6

E-STARS[R] Report
Task Detail Report
08/06/2009 1547

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.6		
Subject	WRPS-PER-2008-0279; SIG; CC-02-01 - Establish a process for assembly of safety significant component		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 07/27/2009
Reference	WRPS-PER-2008-0279	**Due**	07/26/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Inactive
	CC-02-01 - Establish a process for assembly of safety significant component upgrade documentation that is retrievable and traceable to the component. This action addresses CC-02. Deliverable: Revised TFC-ENG-DESIGN-C-15 and TFC-ENG-FACSUP-C 23. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Cato, Diane M - Assign - Completed with comments - 07/17/2009 1516 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 07/20/2009 0708 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf 8. WRPS-PER-2008-0279.6_Closure_TFC-ENG-DESIGN-C-15.doc

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 06/01/2009 1116
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/01/2009 1119
	Approved due date extension to 7/19/09. tls 6/1/09

Task# WRPS-PER-2008-0279.6

	Extension Justification: The action to revise TFC-ENG-DESIGN-C-15 is also required to satisfy corrective action WRPS-PER-2008-0279.4, which has a due date of 07/19/09. The extension is required align the due dates for both corrective actions and to coordinate the necessary changes to provide a single revision to the subject procedure. The extension was approved by F. Beranek, ESRB Sponsor, on 6/1/09. tls 6/1/09
Poster	Cato, Diane M - 07/17/2009 1516
	Completed
	Revised TFC-ENG-DESIGN-C-15 (attached) to include provisions for linking the completed CGD package record in IDMS to the component in CHAMPS (see step 4.8.6). This will ensure that component upgrade documentation is retrievable and traceable to the component. Note that the original deliverable called for TFC-ENG-FACSUP-C 23 to be revised also, however, it was determined that this was not required as the process is not complicated and instructions were available on the CHAMPS website.
Poster	Knight, Mark A (Owen, Annette) - 07/20/2009 0708
	Concur
	Concur with action taken by D Cato.
Poster	^PER CAs (Owen, Annette) - 07/21/2009 0942
	CLOSED
	Closure statement and attached documentation are adequate to close this action.
Poster	^PER CAs (Owen, Annette) - 07/21/2009 1232
	Task Re-Open
	This was closed in error.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 07/27/2009 1022
	Steelman, Tracy L -- CLOSED
	Reviewed and closed. tls 7/27/09

TASK DUE DATE HISTORY

Modified	06/01/2009 1117 - ^PER Coordinator	**New Due Date**	07/19/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	06/08/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Ownership matrix

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1.0 PURPOSE AND SCOPE
(7.1.1, 7.1.2)

This procedure establishes the dedication process, dedication requirements, and related responsibilities for the use of commercial grade items (see Section 5.0, "Definitions") as safety significant components in safety significant applications for Hanford Tank Operations Contractor (TOC) managed nuclear facilities. These activities are performed to ensure that the safety functions of safety significant items are preserved (i.e., the commercial grade item is suitable for use in its intended application and that the item will perform its safety function). This procedure does not define procurement steps. Refer to TFC-ENG-DESIGN-C-34 and TFC-BSM-CP_CPR-C-06 for procurement guidance.

This procedure applies to all TOC organizations (facilities or projects) that determine technical and quality requirements for new items in safety significant applications. Existing items intended for use in a safety significant application that have not been procured from an NQA-1 evaluated supplier (i.e., evaluated for the specific components or services) shall be documented as nonconforming in accordance with TFC-ESHQ-Q_ADM-C-02.

2.0 IMPLEMENTATION

Implementation of this procedure revision is effective on August 24, 2009, to allow sufficient time for training on the revised procedure requirements.

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

Figure 1 provides the flowchart for the commercial grade item dedication process.

4.1 General Conventions and Requirements

1. The following terms are synonymous and are used to describe the process, process steps, and process documentation associated with this procedure:

   - Commercial grade item (CGI) dedication (CGID)
   - CGI dedication
   - Item dedication
   - Dedication.

2. Responsible engineering staff shall ensure that CGI dedication documentation required to be prepared by contractors/subcontractors is identified as a deliverable in appropriate contracting documents, is available when needed to support TOC activities, and is subsequently dispositioned and retained as quality record documentation (see Section 4.6 and 4.8) per Section 4.12, step 3, of this procedure.

3. A Commercial Grade Item Dedication form (A-6002-544) shall be prepared and initially approved prior to procurement (see Section 4.6) of all safety significant SSCs not procured from an NQA-1 evaluated supplier (i.e., evaluated for the specific components or services).

NOTE: At-risk procurement and installation activities may be approved by the Chief Engineer or designee. In those cases, at least section 8 of the CGI dedication form must be completed, and existing processes (e.g., QAIPS, conditional acceptance tags, NCRs, etc.) must be used to ensure the item is not placed into service prior to approval of the complete CGI dedication package.

4. Additional guidance on commercial grade item dedication can be found in ASME NQA-1-2004, NON-MANADATORY APPENDIX 7A-2; EPRI NP-5652, June 1988; and EPRI TR-102260, March 1994 (i.e., these documents can be found in the Engineer's Toolbox, CGI Info folder).

4.2 Identify Item and Item Safety Classification

Responsible Engineer

1. Identify the item to undergo the dedication process and the need to establish requirements for that item.

2. If the item's safety classification is known (e.g., is identified in RPP-8792, "Subsystem and Component Level Safety Equipment List for Tank Farms Safety System"), go to Section 4.3.

Lead Discipline Engineer

3. If the item being evaluated has not been classified, identify/approve the safety classification in accordance with TFC-ENG-FACSUP-23 and RPP-RPT-29160, and go to Section 4.3.

4.3 Establish Documentation Needs

Responsible Engineer

1. Review existing CGID packages to determine if a dedication has been performed for a comparable commercial grade item.

2. If an existing CGID package exists, use it as an aid in developing the CGID package for the new item and or new application.

4.4 Determine Critical Characteristics

The Commercial Grade Item Dedication package must be supported by a technical evaluation. The purpose of the technical evaluation is to ensure that the design is appropriate for the intended safety function. The credible failure modes of an item in its normal operating, abnormal operating, and credited accident environments and the effects of those failure modes on the ability to fulfill the safety function must be evaluated and documented in the technical evaluation and selection of the critical characteristics.

Responsible Engineer

1. Determine the critical characteristics for acceptance of the item.

   NOTE: Refer to Attachment C for assistance with a description of what critical characteristics are, and how to identify critical characteristics.

   a. If a technical evaluation information for the item is available from existing technical baseline documents, use them to establish critical characteristics for acceptance without

performing a new determination of critical characteristics for design.

b. If technical evaluation information cannot be obtained at the level of detail necessary, determine critical characteristics for acceptance based on an analysis of safety functions and failure modes and effects. This technical evaluation will use the process outlined in Attachment C, Section 1.4, Item (2), and be performed and documented in accordance TFC-ENG-FACSUP-C-02.

2. Ensure critical characteristic selection for acceptance address the following:

   - Identifiable and measurable attributes or variables appropriate for the safety function.

   - Criteria related to the location of the item in the facility or criteria addressing the most severe location of the item in the facility, unless controls are in place to prevent usage in undesignated locations.

3. Document the critical characteristics, and the basis for the critical characteristics for acceptance, in Section 3 of A-6002-544.

4. Document the critical characteristics for acceptance in Section 5 of A-6002-544.

4.5 Determine Acceptance Criteria and Methods

Responsible Engineer

1. Determine the following:

   - Acceptance criteria and allowable tolerances, where applicable, for each of the critical characteristics listed in Section 5 of A-6002-544.

   - The method(s) of acceptance that will be used to verify the critical characteristics will include selecting one or more of the methods discussed in Attachment A and noting the selection in Section 5 of A-6002-544.

   - The applicable testing procedure to be used if testing is a selected verification method.

     NOTE: If testing is required, then reference or attach the existing or newly prepared test procedure in Section 5 of A-6002-544.

4.6 Obtain Initial Reviews and Approval to Proceed with Verification

NOTE: Signatures below denote that the signer has reviewed all relative and pertinent information for their areas of responsibility, including assurance that the information provided is both complete and accurate.

Design Organization	1.	If a design organization staff member prepared A-6002-544, ensure that it is reviewed and signed in Section 7 by the design agent.
Responsible Engineer	2.	Complete and/or review and approve the dedication form for completeness and technical adequacy.
	3.	Sign appropriate blank in Section 5 of A-6002-544.
Quality Assurance Engineer	4.	Review and approve the dedication form for adequate QA requirements, and sign Section 5 of A-6002-544.
Lead Discipline Engineer	5.	Review and approve the dedication form for technical adequacy, and sign Section 5 of A-6002-544.
Responsible Engineer	6.	Submit initial reviewed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.

4.7 Verify Critical Characteristics

Responsible Engineer	1.	Distribute the dedication package to the responsible implementing organization(s) for verification of critical characteristics and processing as identified in step 2 below. NOTE 1: Dedication package consists of the form plus supporting documentation. NOTE 2: Implementing organizations may include tank farm operations, construction, engineering, quality assurance, procurement support, or an offsite laboratory or testing agency, among others that could have responsible actions to complete the dedication process.
Implementing Organization	2.	Perform the following implementation activities in accordance with this procedure, TFC-PLN-02, and TFC-ESHQ-Q_INSP-C-01. a. Complete the commercial grade item dedication activities and documentation on the dedication form in accordance with the instructions and any test procedures provided. b. Segregate and (green) tag (or otherwise identify) the item(s) that have been satisfactorily dedicated to ensure traceability back to the dedication package.

4.8 Obtain Final Reviews and Approval

Design Organization Staff Member	1.	If a design organization performs the verification function, ensure that it is reviewed and signed in Section 5 by the Design Agent.
Responsible Engineer	2.	Review and approve the completed dedication form for completeness and technical adequacy, and sign Section 7 of A-6002-544.
Quality Assurance Engineer	3.	Review and approve the dedication form for adequate QA requirements completion, and sign Section 5 of A-6002-544.
Responsible Manager	4.	Review and approve the upgrade dedication package for completeness and technical adequacy, and sign Section 5 of A-6002-544 as the design authority.
Responsible Engineer	5.	Submit completed and approved dedication package to Records & Document Control for processing in accordance with TFC-ENG-DESIGN-C-25.
	6.	Link the completed CGID record to the component in CHAMPS. (Instructions for linking records in CHAMPS can be found on the TFCHAMPS website.)

4.9 Commercial Grade Item Dedication Package Changes

Responsible Engineer, Design Organization Staff Member, Quality Assurance Engineer, Implementing Organization	1.	Process changes to completed dedication packages in the same manner as the original dedication package in accordance with Sections 4.1 through 4.8 of this procedure. NOTE: All revisions shall be numerical (e.g., Rev. 1, 2, 3, etc.).

5.0 DEFINITIONS

NOTE: See TOC Glossary for definitions of safety equipment list, safety significant structures, systems, and components; and other terms common to many engineering procedures.

Commercial grade item. A structure, system, or component, or part thereof, that affects its safety function, that was not designed and manufactured in accordance with the requirements of ASME NQA-1.

Component. A piece of equipment such as a vessel, pump, valve, core support structure, relay or circuit breaker, which is combined with other components to form an assembly. Components typically are designated with an identification number (e.g., tag no.).

Critical characteristics. Important design, material, and performance characteristics of a commercial grade item or service that, once verified, will provide reasonable assurance that the item or service will perform its intended safety function.

Dedication. An acceptance process performed in accordance with ASME NQA-1 to provide reasonable assurance that a commercial grade item or service will successfully perform its intended safety function and, in this respect, is deemed equivalent to an item or service provided under the requirements of ASME NQA-1.

Fit. Those characteristics of an item that define the location and connection of installation interfaces (e.g., dimensions, match up, and method of mounting).

Form. Those characteristics of an item that define the physical envelope (e.g., type or style of item, weight, material composition, and dimensional shape).

Function. The operation an item is required to perform to meet the component or system design basis including passive operations such as pressure containment.

Item. An all inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, product, structure, subassembly, subsystem, system, or unit. (In this procedure, item is used predominantly to represent a part and/or component.)

Part. Items from which a component is assembled (e.g., resistors, capacitors, wires, connectors, transistors, lubricants, O-rings, springs, bearings, gaskets, bolting, and seals).

Work order. A collection of documents used to release and control work (e.g., through the Work Management System) that includes special work instructions, drawings, hold points, any specific radiological or toxicological control requirements, and pre-approved procedures.

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Commercial Grade Item Dedication Form (A-6002-544)	N	Y	L	ADM-17.32a	N/A	IRM Service Provider

The identified record custodian is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. ASME NQA-1-2004, "Quality Assurance Program Requirements for Nuclear Facilities."

2. TFC-PLN-02, "Quality Assurance Program Description."

7.2 References

1. TFC-ENG-FACSUP-C-23, "Equipment Identification and Date Management."

2. TFC-ENG-DESIGN-C-25, "Technical Document Control."

3. TFC-ENG-DESIGN-C-34, "Technical Requirements for Procurements."

4. TFC-ENG-SB-C-06, "Safety Basis Development."

5. TFC-ENG-FACSUP-C-02, "Operability/Technical Evaluations."

6. TFC-ESHQ-Q_C-C-03, "Control of Suspect/Counterfeit Items."

7. TFC-ESHQ-Q_INSP-C-01, "Control of Inspections."

8. TFC-ESHQ-Q_ADM-C-02, "Nonconforming Item Reporting and Control"

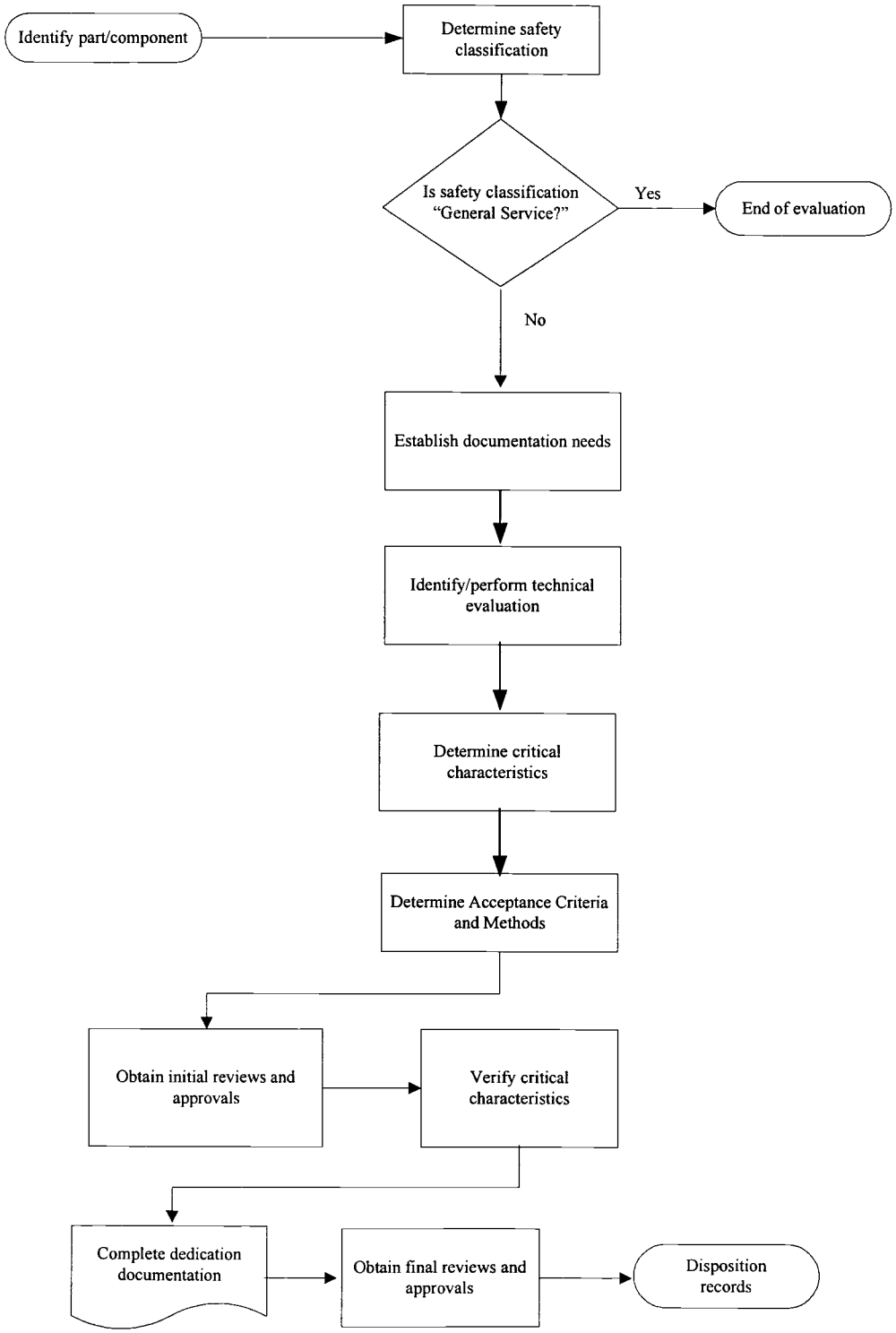
9. RPP-RPT-29160, "Methodology for Equipment Safety Classification and QA Level Determination."

10. TFC-BSM-CP_CPR-C-06, "Procurement of Items (Materials)."

11. EPRI NP-5652, June 1988, " Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)."

12. EPRI TR-102260, March 1994, " Supplemental Guidance for the Application of EPRI Report NP-5652 on the Utilization of Commercial Grade Items."

Figure 1. Commercial Grade Item Dedication Process Flowchart.



ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS

(Used in conjunction with A-6002-544)

Heading

Commercial Grade Item No: A unique number (CGI-XXXXX) obtained for the commercial grade item dedication form from the Hanford Document Numbering System (HDNS).

NOTE: CGI numbering allows for "dash numbers" to be inserted in the header block provided. The "dash numbers" are intended as user-defined alphanumeric designators to assist in identifying the CGI form and being able to relate it to a particular component, component location, project, etc. For example, it might be a component's Equipment Identification Number (EIN).

Related ECN No: If the commercial grade item dedication involves a design change (e.g., a revision to a drawing or specification), include the related ECN No.; otherwise, enter "NA."

Title: A brief descriptive title indicating what and where.

Work Order No. Enter the number of the work order number that will be used for verification of critical characteristics and/or used to install the commercial grade item (if known).

Rev. No.: Provide the revision number or enter "NA," as applicable.

Reason for Revision: Describe why a revision was prepared or enter "NA," as applicable.

Key words: Enter key words useful for searching on RMIS or other document control database for this dedication package.

Responsible Engineer: Identify the individual assigned and company assigning responsible engineer responsibility for this dedication package (no signature required in this block).

Section 1 - Part Information

In this section, the following information shall be listed as applicable. If a component is the subject of the commercial grade item dedication, rather than a part, Section 1 is left blank.

1.1 Item number: Enter either the requisition number or the spare parts stock number.

1.2 Manufacturer: Enter the name of the manufacturer of the part being evaluated.

1.3 Supplier: Enter the name of the supplier If an Organization other than the manufacturer is going to supply the part or If the evaluation is for existing stock and the supplier is known. If the supplier is the same as the manufacturer, enter "same."

1.4 Mfr. Part/Model No.: Self-explanatory

1.5 Supplier's P/N: Supplier's part number (see Section 2.0 - item 2.7)

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

1.6 Part Description: Enter a comprehensive technical description derived from design documents and/or vendor/manufacturer published data. Format by noun first (e.g., transmitter, pressure, 3-15 PSIG input, 4-20 mADC output; or valve, stem, 316 SS).

1.7 End Use Description: Enter the application for the part being evaluated. This description should be stated so that the reviewer will understand how the part is applied in the host component (e.g., body to bonnet bolting, inlet flange gasket, pump mechanical seal).

Section 2 - Component Information

Enter the following information as applicable. Enter "NA" in blocks that do not apply.

2.1 Equip. Number: This is a unique identifying number for a component that is (or will be) installed in an operational nuclear facility. If the commercial grade item dedication process is being applied to a component with multiple plant locations and the same safety function application (i.e., Sections 4, 5, and 6 of the commercial grade item dedication form are the same for each location), list the associated equipment number(s). For such situations, Sections 1 through 7 and the first half of Section 8 of the form need to be only filled out once. Individual copies of Section 8 with the initial review and approval signatures may then be used to document the verification activities for the component at each location. If the safety function application is not the same, a separate commercial grade item dedication package shall be prepared, unless the dedication is for a bulk commodity item with only a passive safety function(s) (e.g., bolts, conduit, Unistrut[1]). These types of bulk commodity items may be dedicated with the same package for multiple plant locations and different safety function applications as long as the most stringent design requirements and associated critical characteristics are used in the dedication process (e.g., as related to temperature, design loads, radiation exposure).

2.2 Specification Number: Enter the applicable procurement or construction specification number for the component.

2.3 Manufacturer: Enter the manufacturer of the component.

The manufacturer of a part being evaluated may not necessarily be the same as the manufacturer of the part's host component (e.g., evaluating a Barksdale switch on a Pittsburgh air dryer vs. a Limitorque[2] pinion gear on a Limitorque actuator). In all cases, during implementation of this procedure, if any supplier information is the same as manufacturer information, the applicable supplier blocks shall be marked "same."

2.4 Past P.O. Number: Enter the purchase order number that supplied the existing component.

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[1]Unistrut is a registered trademark of Unistrut Corporation.

[2]Limitorque is a registered trademark of Limitorque Corporation.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)
(Used in conjunction with A-6002-544)

2.5 Mfr. Part/Model No.: This may also be a manufacturer's drawing number. If this is the case, an attempt should be made to determine the revision used to manufacture the component to aid in performing the type of replacement evaluation.

2.6 Equipment Supplier: Enter the Organization that supplied the component if it differs from the manufacturer.

2.7 Equipment Supplier's Part Number: Complete this block If the supplier has assigned a unique component or drawing number that is different from the manufacturer's assigned part/model (component) or drawing number.

If it is determined in the course of the evaluation that the supplier performed conditioning or otherwise enhanced the quality of the item for commercial grade item dedication purposes, future procurement should be sole sourced (if possible) to this supplier.

2.8 Component Description: Describe the component and its unique RPP service application (e.g., 8-inch relief valve used in a specific tank pressure relief system). For multiple applications (see 2.1 of this attachment), identify the various applications. If the applications are the same, but there are different systems or units, list related identifiers (e.g., A, B, C, etc.).

Section 3– Determine Critical Characteristics

3.1 Identify the Technical Baseline document(s) or Technical Evaluation used to establish critical characteristics for acceptance.

3.2 Document part/component number, all of the applicable characteristics that affect the safety function of the item and which are critical characteristics for CGID acceptance.

3.3 Document the basis for the selection of critical characteristics for CGID acceptance. (Provide a description of why once selected and verified, the critical characteristics provide a reasonable assurance that the item/service will perform its safety function.)

Section 4 - References

List all references used for the safety classification. Any documents that are not attached must have an identification number listed so that the document may be located.

4.1 National Codes/Standards: List any applicable codes or standards (e.g., ASME, NEMA, ASTM, IEEE).

4.2 Safety Analysis Report: Reference the applicable safety analysis report information in this section.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

4.3 Drawings: Reference applicable Project Hanford drawing information in this section (e.g., flow, logic, or wiring diagrams, schematics). In addition to the drawing number, list the type of drawing.

4.4 Vendor Technical Manuals: List the number of the applicable, approved vendor manuals in this section.

4.5 Manufacturer/Supplier Information: List any information obtained from outside sources in this area. As stated above in the drawing section, list the type of information referenced. If the referenced information is not readily available, it should be made an attachment to this form in the commercial grade item dedication package.

4.6 Other: List any other resources used during the dedication process that are not covered by 6.1 through 6.5 above.

Section 5 - Verification of Critical Characteristics

5.1 Enter those critical characteristics for acceptance that shall be verified as part of the dedication (e.g., dimensions A & B). Some form of an item's identification is always a critical characteristic (e.g., mfr. part or model number, ASTM markings).

5.2 Enter the acceptance criteria and allowable tolerances, if applicable, for each of the critical characteristics identified (e.g., dimension A-3.3" to 3.5", dimension B-1 3/16" to 1 5/16").

5.3 For number to test, this entry is either 100% or "Sample," based on ANSI/ASQC-Z1.4 or other sample basis. If a sample is used, document the basis for the sample size (e.g., ANSI/ASQC-Z1.4).

5.4 Indicate the acceptance method(s) by placing the applicable method number(s) (1, 2, 3, 4, and/or 5) in the appropriate block. More than one acceptance method may be used for verification of critical characteristics. (Further discussion on acceptance methods are provided at the end on this attachment.) NOTE: "Receipt Inspection" (for new procurements) <u>must</u> be one of the acceptance methods employed.

5..5 Indicate the test procedure or purchase order receiving report number used to support the chosen acceptance method(s) if applicable.

5.6 Indicate the number of items tested and the number of items that failed (e.g., 10/2).

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

5.7 Indicate the verifying Organization (e.g., Quality Assurance, procurement support, offsite laboratory, etc.).

> NOTE: For those critical characteristics verified by receipt inspection, the responsible engineer or QA shall note the Verifying Organization as "AVS" or "WRPS QC", sign the critical characteristics as being verified, and attach a copy of the completed Quality Assurance Inspection Plan (QAIP), and associated documents (e.g., test reports, certificates of calibration, material test reports, certificates of conformance, etc.).

5.8 The person evaluating the results shall print their name, then sign and date the form. This is required both for items determined to be satisfactory or unsatisfactory. If the critical characteristics have been previously verified and documented on another document, signature of the original verifier is not required. Indicate the supporting documentation in this space. If any test is determined to be unsatisfactory, the reason for the failure shall be listed in the "Comments" block, and the form shall be returned to the responsible engineer or design organization for disposition.

5.9 Indicate any special instructions required for testing performed as part of the dedication process (e.g., calibration records of instruments used are required or the use of a qualified material testing vendor). (Use a continuation sheet, as necessary.)

5.10 For details on the initial and final approval signatures, see Sections 4.10 and 4.12 of this procedure.

ATTACHMENT A – COMMERCIAL GRADE ITEM DEDICATION FORM INSTRUCTIONS (cont.)

(Used in conjunction with A-6002-544)

Acceptance Methods and Customer/Supplier Activities

Acceptance Method	Specific RPP Activities	Specific Supplier Activities
Method 1 ***Special Tests and Inspections***	• Determine sample size. • Determine post-installation testing requirements. • Determine special receipt tests and inspections. • Accept item via special receipt inspections. • Accept item via post-installation testing. Note: Method 1 does NOT require utilization of an additional method.	• Furnish technical design information to enable verification of critical characteristics.
Method 2 ***Commercial Grade Survey of Supplier***	• Conduct survey of commercial grade program. • Require the supplier to invoke the controls necessary to verify critical characteristics. • Accept item based on supplier Certificate of Conformance (see ASME, NQA-1, Requirement 7, Section 503) verified by commercial grade survey. Note: Method 2 is generally employed for commodity type items and is used in conjunction with a supporting method. (Can be used as primary basis for dedication in addition to normal receipt inspection.)	• Implement controls necessary to verify critical characteristics. • Provide customer with a Certification of Conformance (as requested).
Method 3 ***Source Verification***	• Conduct source verification. • Accept item based on documented source verification results. Note: Method 3 is used in conjunction with receiving inspection to verify the documentation of the source inspection/test.	• Implement item-specific design, fabrication, assembly, manufacturing, testing, or inspections controls substantiated by the source verification for a particular commercial grade item. • Allow customer access to facilities to conduct source verification.
Method 4 ***Acceptable Supplier / Item Performance Record***	• Establish documented performance record. • Monitor performance of item. • Confirm applicability of independent product test results, INPO NPRDS, commercial program audits/surveys conducted by industry groups, utilization of national codes and standards, supplier responses to commercial grade program controls, results of periodic maintenance surveillance, results of successfully employing other acceptance methods. • Accept item by issuing certification that is based on supplier/item performance record. Note: Method 4 is only used in conjunction with one or more of the other methods.	• Respond to commercial grade program controls questionnaire. • Ensure item complies with national codes and standards, if applicable.
Method 5 ***Receipt Inspection***	• A post-delivery inspection performed as part of the acceptance process to verify that ordering requirements have been met. The ordering requirements to be verified may include: – Relatively simple or standard inspections specified by the ordering requirements for order acceptance including visual, dimensional, nondestructive, etc. inspections and examinations. – Inspection/tests specified by the purchase requisition to be performed for order acceptance by RPP Work Groups – .Requirements for deliverable supplier documentation relative to engineering or quality data. Note: Method 5 is only used in conjunction with one or more of the other methods.	▪ Furnish information, test reports, technical data, Certificate of Conformance see purchase order requirement.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS

1.0 IDENTIFICATION AND SELECTION OF CRITICAL CHARACTERISTICS
(Ref EPRI NP-5652, June, 1988 and EPRI TR-102260, March, 1994)

Critical characteristics are identifiable and measurable attributes/variables of a commercial grade item which once verified, provide reasonable assurance that the item received is the item specified. Based on the performance and design basis for an item, a variety of characteristics can be identified that are critical for satisfactory performance. However, for purposes of establishing critical characteristics for acceptance, only certain of these must be verified to provide reasonable assurance that the item specified is the item received. Commercial grade items which perform safety functions inherently have one or more characteristics critical to assuring equivalency to the item it is intended to replace. The item's part number by definition is a critical characteristic.

1.1 Types of Critical Characteristics

Critical characteristics that could be identified, in addition to the part number, are physical characteristics of an item, identification markings, or performance characteristics of the item. A general listing of typical critical characteristics is provided in Table B-1. A listing of typical commercial grade items, their intended application, and potential critical characteristics is provided in Tables B-2 and B-3. The potential critical characteristics associated with the items in Tables B-1, B-2, and B-3 are provided for illustration only. These lists are not intended to be all inclusive or exclusive of critical characteristics which may be deemed important to specific applications. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified. Commercial grade items intended for installation in seismically or environmentally qualified applications require critical characteristics necessary to assure that the original qualification of the parent component is maintained. A discussion on maintaining seismic and environmental qualification is provided in Appendix F of EPRI NP-5652, June, 1988. Commercial grade items intended for generic safety-related applications rather than for installation in specific applications require special consideration when selecting critical characteristics. Critical characteristics should be selected based on the most severe conditions encountered in the generic application unless controls are in place to prevent inappropriate use. These controls should be sufficient to ensure that commercial grade items are not used in applications for which they have not been evaluated and accepted. A discussion regarding generic and specific applications is provided in Appendix G of EPRI NP-5652, June, 1988.

1.2 Selection of Critical Characteristics

It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received meets specified requirements. The term "critical characteristics" is defined as those "measurable and identifiable attributes/variables of a commercial grade item, which once selected to be verified, provide reasonable assurance that the item received is the item specified." It is important to differentiate those critical characteristics selected to describe "critical characteristics for acceptance," and a broader definition for "critical characteristics for design." Critical characteristics for design are "those properties or attributes

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-1. General Listing of Typical Critical Characteristics.

Product Identification

Color coding
Display type (scale, graduation)
Enclosure type
Industry standard markings
Nameplate data
Part number/unique identifier

Physical Characteristics

Balance
Capacitance
Cloud point
Coating
Color
Composite material hardness
Concentration
Conductivity
Continuity
Density/Specific gravity
Dielectric strength
Dimensions (to within manufacturer's tolerance)
Drop point
Ductility
Durometer hardness
Elasticity
Fatigue resistance
Flammability
Flashpoint
General configuration or shape
Homogeneity
Inductance
Leachable halogen content
Luminescence
Material of construction
Permeability
Plating
Polarity
Pour point
Purity
Resilience
Resistance
Solubility
Spring constant
Surface finish
Surface hardness
Tensile strength
Torque
Viscosity
Weight

Performance Characteristics

Accuracy
Burn-in endurance
Chatter
Current rating
Cycle time
Deadband width
Flow rate
Gain
Horsepower
Input/output voltage
Interrupt rating
Interrupting current
Leakage
Load rating
Open/closure time
Operability (fail open/close, stroke)
Operating range
Performance during (no drift) under voltage conditions
Pick-up/Drop-out voltage
Power rating
Pressure drop
Pressure rating
Repeatability
Ride out
Rational direction
Set point stability
Speed
Time/current response
Voltage rating

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-2. Critical Characteristics Applied to Specific Items.

Commercial Grade Item (Application)	Critical Characteristics
Valve Stem	Configuration, dimensions, material, tensile strength, ductility, finish, markings, hardness
Pump Impeller	Configuration, dimensions, material, hardness, balance, flow rate
Motor	Nameplate data (horsepower, speed), insulation class, frame size, materials, weight, shaft type, coupling type, bearing types
Nonmetallic Diaphragm	Configuration, dimensions, material, durometer hardness, reinforcement material
Solenoid Valve	Configuration, size, pressure rating, materials, voltage rating, current rating, coil class, open/closure time
Limit Switch	Configuration, dimensions, materials (metallic and nonmetallic), markings, operability, voltage rating, current rating
Impeller Key	Configuration, dimensions, material, hardness
Spring	Configuration, dimensions (free length, coil diameter), spring rate, finish
Valve Packing Gland	Configuration, dimensions, material, tensile strength, hardness, finish
Filter Regulator Assembly	Configuration, dimensions, materials, flow rate, pressure range, pressure rating, temperature rating, filter micron size

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-2. Critical Characteristics Applied to Specific Items. (cont.)

Commercial Grade Item (Application)	Critical Characteristics
Pinion Gear	Configuration, dimensions, material, hardness, pitch
Crane Wheel Axle	Configuration, dimension, material, tensile strength, hardness, finish
Shaft Coupling	Configuration, dimensions, materials, hardness
Anchor Bolt	Configuration, dimensions, material, wedge hardness, pitch
Torque Switch	Configuration, dimensions, materials (metallic and nonmetallic), operability
Pump Mechanical Seal Assembly	Configuration (completeness of assembly), materials, finish, leakage, leachable halogen content, dimensions
Valve Seal Ring	Configuration, material dimensions, finish leakage
Integrated Circuit	Configuration, gain, input/output impedance, frequency responses, operability
Pressure Transmitter	Configuration, voltage rating, current output, pressure rating, materials, accuracy
Control Switch	General configuration, contact configuration, voltage rating, current rating, materials, dimensions, operability
Transistor	Markings, gain, input/output impedance, current rating, voltage rating, operability

NOTE: The potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-3. Critical Characteristics Applied to Generic (Commodity) Items.

Commercial Grade Item	Critical Characteristics
Bearing	Configuration, dimensions, load rating, material, model number
Bolting	Configuration, dimensions, pitch, material, tensile strength, hardness, plating
O-ring	Dimensions, material, durometer hardness, elongation, leachable halogens
Terminal Block	Configuration, voltage rating, current rating, materials, dielectric strength
Crimped Terminal Connector	Configuration, material, dimensions (wire size, ring tong size), voltage rating, continuity, tensile pullout strength, color
Relay	Configuration, pick-up/drop out voltage, voltage rating, current rating, chatter, response time
Fuse	Configuration, current rating, interrupt rating, time/current response, dimensions
Resistor	Configuration, markings, resistance, power rating
Drive Belt	Dimensions, cross-sectional shape, ride out, fatigue resistance, load rating, material, tensile strength
Spiral Wound Gasket	Configuration, dimensions, markings, style number, materials (filler and windings), pressure rating, leachable halogens, spiral density
Cotter Pin	Configuration (point type), dimensions, material, finish, hardness

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Table B-3. Critical Characteristics Applied to Generic (Commodity) Items. (cont.)

Commercial Grade Item	Critical Characteristics
Pressure Switch	Configuration, dimensions, material (pressure retaining parts), voltage rating, response time, accuracy, nameplate data, pressure range, wire rating, enclosure type, dielectric strength (insulation), deadband width
Temperature Switch	Configuration, dimensions, material, voltage rating, response time, accuracy, nameplate data, temperature range, wire rating, enclosure type dielectric strength (insulation), deadband width
Lubricating Grease/Oil	Color, specific gravity, viscosity, drop point, cone penetration, pour point, chemical composition, cloud point
Fuel Oil	Density, flash point, cloud point, pour point, kinematic viscosity, chemical composition, BTU rating
Framing Device	Configuration, shape, dimensions, material, tensile strength coating
Material (e.g. Plate, Angle)	Dimensions, shape, material, tensile strength, hardness, ductility, markings, coating

NOTE: These potential critical characteristics are provided for illustration only. The lists are not intended to be all-inclusive or exclusive of critical characteristics which may be deemed important.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

which are essential for the item's form, fit and functional performance. The selection of critical characteristics for acceptance is "based upon the complexity, intended safety-related function, and performance of the CGI" using engineering judgment. It is only necessary to identify and verify the appropriate critical characteristics which provide reasonable assurance that the item received is the item specified.

1.3 Proper Relationship of Critical Characteristics

Regarding critical characteristics for acceptance, critical characteristics that could be identified are physical characteristics of an item, performance characteristics of the item as well as product identification characteristics. They should include some number of "critical characteristics for design" as well as product identification characteristics such as part number. The critical characteristics for acceptance that are physical and performance characteristics are a subset of the larger population of critical characteristics for design. Physical or performance characteristics of the item that may have been specified in the original equipment specification and affect the item's safety-related functional performance should be considered as those selected for verification. If the original equipment specification did not specify technical and quality requirements at the item level, then the critical characteristics selected for verification during the acceptance process should be based on "the complexity, intended safety-related function, and performance" of the item. Once the critical characteristics for acceptance have been selected for a commercial grade item, each one should be verified using one or a combination of the four acceptance methods. Verification of the selected critical characteristics for acceptance should provide the purchaser confidence that the remaining characteristics of the item are also conforming to the item design. In achieving reasonable assurance, it is assumed that if the properly selected critical characteristics for acceptance are conforming, then the remaining critical characteristics for design were also adequately controlled by the supplier. Sole reliance on part number verification is inadequate to reasonably assure the CGI received met specified requirements. Similarly, reliance only on the verification of product identification characteristics is generally inadequate to reasonably assure the CGI received met specified requirements.

It must be recognize that many items are uniquely identified by means other than by a part number. This may affect the selection of product identification critical characteristics for verification during the acceptance process. Caution should be used when relying on part number as contributing to the item acceptance if there is no basis for knowing that the part number has been correctly applied to the item.

1.4 Lessons Learned

If adequate technical and quality requirements for the item are available from existing design basis information, then they may be used to establish critical characteristics for acceptance without performing a new determination of critical characteristics for design. Original item specifications (or current approved revisions) are the preferred source for determination of critical characteristics for design, where such specifications are available or can reasonably be obtained. Specifications used to identify critical characteristics for design must be at the appropriate level of detail for the item being procured. For example, if an entire replacement valve is being procured, then the valve specification may be the appropriate specification for determination of critical characteristics for design. However, if a replacement valve stem is being procured, then

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

the valve, specification alone may not completely define the stem's technical and quality requirements. Additional design information may be available from the valve supplier. If this information can be reasonably obtained, it is the preferred source of information from which to determine critical characteristics for design. If adequate design information cannot be obtained at the level of detail necessary, then determination of critical characteristics for design based on an analysis of safety functions and failure modes and effects may be performed.

An effective process for establishing critical characteristics is as follows:

Process

- What are the safety function(s) of the host component? (Refer to EPRI Report NP-6895 for detailed guidance)
- What are the plant-specific design function(s) (including known safety functions) of the item? (Refer to EPRI Report NP-6406 and EPRI Report NP-6895 for detailed guidance)
- What are postulated, credible failure mechanism(s) of the item?
- Will failure mode adversely affect component/system design function?
- What properties or attributes are essential for the item's form, fit and functional performance?
- What properties or attributes provide reasonable assurance the item received meets specified requirements and the basis for their selection?

1.5 Identification and Selection of Critical Characteristics for Acceptance/Achieving Reasonable Assurance in the Context of CGI Acceptance

This example is provided to demonstrate the identification of critical characteristics for design and the selection of critical characteristics for acceptance. It is further developed to demonstrate achieving reasonable assurance in the context of CGI acceptance.

Example

I. Replacement Item: Valve Stem (sixteen are procured)

II. Host Component: Active valve required to open and close

III. Function of Item and Functional Classification:
The plant-specific design function of the valve stem is first identified considering the Host component's safety function. The safety function of the stem is to open and close the valve during normal and accident conditions within specified times.

IV. Factors considered in achieving reasonable assurance:

A. Were the proper critical characteristics for acceptance selected for verification (based upon the complexity, intended safety-related function, and performance of the item)?

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

Critical characteristics for design (CCDs) are first considered. The CDDS may be formally documented if an equivalency evaluation was required. Otherwise, potential CCDs may be informally determined by examining procurement technical requirements, the supplier's part drawing, and considering the valve stem's safety function.

The supplier may not control all critical characteristics for design unless he had made a commitment. This commitment is evidenced by:

(a) Accepting technical requirements related to the CCDs in the purchase order

(b) Identifying that it controls the CCDs in its product literature (e.g., catalog, product specification)

(c) Internal program commitment (e.g., part drawings, sub-supplier purchase order requirements).

Critical Characteristics for Design for the subject valve stem are determined to be:

- Dimensions including tolerances necessary for the item's functional performance
- Material chemical composition and grade
- Yield strength
- Tensile strength
- Reduction in area (indication of ductility)
- Hardness
- Surface finish.

The original equipment manufacturer established the technical requirements for the stem based on the host component's design function.

The critical characteristics for acceptance are selected from the critical characteristics for design. Also, considered in the selection process are product identification characteristics. After considering the above potential critical characteristics, the responsible technical person selects the following critical characteristics for acceptance:

- Stem length
- Stem diameter
- Material grade
- Hardness
- Configuration
- Part number.

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

B. What is the degree of verification of each critical characteristic for acceptance?

Part number	Visually inspected to ensure the item was tagged with the Manufacturer's part number
Stem length	Measured dimension to verify it was 6.250" + 0.000" - 0.002"
Stem diameter	Measured dimension to verify it was 1.663 + 0.001"

NOTE: Both dimensions were further verified by measuring the stroke time of the valve during post-installation test.

Configuration	Visually inspected configuration by comparing the item to the manufacturer's published product description (i.e., valve assembly drawing).
Material grade	Verified material grade is **ASTM A276**, Type 316 Stainless steel with an alloy analyzer utilizing the services at an approved test facility.
Hardness	Verified Brinnell hardness is between 165 and 195 utilizing hardness tester owned by the utility.

C. Sample Size

Sixteen items were procured on the purchase order and a lot of sixteen was established. EPRI Report NP-7218 was referenced to determine a sample size for each critical characteristic for acceptance. Results are shown below.

Critical Characteristics for Acceptance	**Sample Size**	**Reference**
Part Number, Configuration,	16	EPRI Report NP-7218 (100%)
Stem Length & Diameter	5	EPRI Report NP-7218 (Normal)
Material Grade	3	EPRI Report NP-7218 (Reduced)
Hardness	10	EPRI Report NP-7218 (Tightened)

V. Discussion of Example:

An adequate technical evaluation was performed which enabled the purchaser to specify the item correctly. To accept the CGI for safety-related use, the user employed engineering judgment for considering several factors to achieve reasonable assurance. Selected critical characteristics for acceptance included both product identification and physical, comprising four measurable attributes and two identifiable attributes. Method I – Special Tests and Inspections was implemented to verify the selected critical characteristics using both receipt tests/inspections as well as post-installation testing. The degree of verification of each critical characteristic appropriately corresponded to the design functions of the item for its intended application. The sampling method was appropriate

ATTACHMENT B – DETERMINING CRITICAL CHARACTERISTICS (cont.)

for the item being procured. Upon completion of the critical characteristic verification, the user was reasonably assured the items received met specified requirements and were acceptable for safety-related use.

In summary, reasonable assurance is obtained that the item received meets specified requirements without having verified all CCDs. The verification activities provide sufficient confidence that the supplier has met his contractual obligation to provide an item meeting the procurement technical requirements.

Task# WRPS-PER-2008-0279.7

E-STARS[R] Report
Task Detail Report
08/06/2009 1548

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.7		
Subject	WRPS-PER-2008-0279; SIG; CC-02-02 - Establish a guidance document for engineering personnel turnover		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	10/07/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0822	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CC-02-02 - Establish a guidance document for engineering personnel turnover that identifies key roles, responsibilities, in-process work assignments and open commitments during changes in work assignments. This action addresses CC-02. Delliverable: Guidance document. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Nelson, Eric A - Assign - Delegated - 02/04/2009 1538 *Instructions:* ↳ *Routing List:* Route List - Active *Instructions:* • Littlejohn, Sue M - Assign - Awaiting Response	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 10/04/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 06/19/2009 1441
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.

Task# WRPS-PER-2008-0279.7

Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/19/2009 1443
	Approved due date extension to 9/30/09. tls 6/19/09
	Extension Justification: Higher priority work, including JCO TF-09-01 closure activities, CGID Program SIG PER corrective actions, funding/budget activities, EVMS verification activities and ISMS Phase II verification activities. The extension was approved by B. Dixon acting for F. Beranek, ESRB Sponsor, on 6/19/09. tls 6/19/09

TASK DUE DATE HISTORY

Modified	06/19/2009 1442 - ^PER Coordinator	**New Due Date**	09/30/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	06/22/2009 0000
Modified	01/29/2009 0822 - ^PER CAs	**New Due Date**	01/09/2010 0000

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0279.8

E-STARS[R] Report
Task Detail Report
08/06/2009 1548

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.8		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-06 - Develop training material on the revised CGI dedication proce		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	09/07/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CATPR-01-06 - Develop training material on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02. Deliverable: Training material on revised CGI dedication process. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Keith, Lloyd J - Assign - Delegated - 06/11/2009 0912 *Instructions:* ↳ *Routing List:* Route List - Active *Instructions:* • Cuneo, Joseph R - Assign - Awaiting Response	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 09/04/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 06/16/2009 1428
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/16/2009 1435

Task# WRPS-PER-2008-0279.8

	Approved due date extension to 8/31/09. tls 6/16/09		
	Extension Justification: Actions that must be completed before .8 and .9 can even be started were previously extended by other organization. The extension was approved by F. Beranek, ESRB Sponsor, on 6/16/09		
TASK DUE DATE HISTORY			
Modified	06/16/2009 1428 - ^PER Coordinator	**New Due Date**	08/31/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	07/13/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0279.9

E-STARS[R] Report
Task Detail Report
08/06/2009 1548

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.9		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-07 - Train Engineering and QA personnel on the revised CGI dedicat		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	11/05/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Active
	CATPR-01-07 - Train Engineering and QA personnel on the revised CGI dedication process. This action addresses RC-01, CC-01 and CC-02. Deliverable: Completed training rosters with 90% completion of Engineering and QA personnel. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Keith, Lloyd J - Assign - Awaiting Response - Due Date - 10/29/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 11/02/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments

1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm
4. EM-RP--WRPS-TANKFARM-2008-0002.htm
5. Link to PER
6. RCA 2008-0279 ADDENDUM 5-19-09.pdf
7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS	
Poster	^PER Coordinator (Steelman, Tracy L (inactive)) - 06/16/2009 1428
	Steelman, Tracy L -- Due Date Extension
	Corrective Action item - modification to synchronize with E-STARS.'Action Due Date' was changed. Corrective Action item - modification to synchronize with E-STARS.'Action' was changed.
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 06/16/2009 1436
	Approved due date extension to 10/29/09. tls 6/16/09
	Extension Justification: Actions that must be completed before .8 and .9 can even be started were previously extended by other organization.

Task# WRPS-PER-2008-0279.9

	The extension was approved by F. Beranek, ESRB Sponsor, on 6/16/09		
TASK DUE DATE HISTORY			
Modified	06/16/2009 1429 - ^PER Coordinator	**New Due Date**	10/29/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	10/06/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0279.10

E-STARS[R] Report
Task Detail Report
08/06/2009 1549

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.10		
Subject	WRPS-PER-2008-0279; SIG; CATPR-01-08 - Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	10/06/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	CATPR-01-08 - Evaluate and revise, as required, the commercial grade item dedication records of safety significant equipment included in Letter, W. J. Johnson, WRPS, to S. J. Olinger, ORP, Contract No. DE-AC27-08RV14800 – Request for Approval of Justification for Continued Operation using Existing Safety-Significant Systems during Planned Activities in light of Commercial Grade Dedication Issues, WRPS 0900098, dated January 16, 2009. This action addresses RC-01. Deliverable: Letter documenting evaluation and/or revision, as required, of commercial grade item dedication records included in letter WRPS-0900098. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Cato, Diane M - Assign - Awaiting Response - Due Date - 09/30/2009 0000 *Instructions:*	
	• Knight, Mark A - Review - Awaiting Response - Due Date - 10/04/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

No Comments

TASK DUE DATE HISTORY

Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	10/06/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000

Task# WRPS-PER-2008-0279.10

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# WRPS-PER-2008-0279.11

E-STARS[R] Report
Task Detail Report
08/06/2009 1549

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.11		
Subject	WRPS-PER-2008-0279; SIG; EPA-01 - Perform an End Point effectiveness assessment to: - Verify completion of actions. - Following completion of ac		
Parent Task#	WRPS-PER-2008-0279	**Status**	Open
Reference	WRPS-PER-2008-0279	**Due**	01/01/2010
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Active
	EPA-01 - Perform an End Point effectiveness assessment to: - Verify completion of actions. - Following completion of actions: - Review training material to ensure issues were captured. - Interview for retention of training information, personnel (10 Engrs, 5 QA) who attended training. - Review recently completed CGI documentation (minimum of 2 packages) for compliance to revised process. Deliverable: Completed End Point Assessment that has been presented to and accepted by the Executive Safety Review Board. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Knight, Mark A - Assign - Awaiting Response - Due Date - 12/30/2009 0000 *Instructions:*	

ATTACHMENTS

Attachments	1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm 2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht 3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm 4. EM-RP--WRPS-TANKFARM-2008-0002.htm 5. Link to PER 6. RCA 2008-0279 ADDENDUM 5-19-09.pdf 7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf

COMMENTS

No Comments

TASK DUE DATE HISTORY

Task# WRPS-PER-2008-0279.11			
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/01/2010 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Task# WRPS-PER-2008-0279.12

E-STARS[R] Report
Task Detail Report
08/06/2009 1550

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.12		
Subject	WRPS-PER-2008-0279; SIG; DC-01-01 -Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action add		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 02/05/2009
Reference	WRPS-PER-2008-0279	**Due**	02/16/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS

1	Corrective Action	Inactive
	DC-01-01 -Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action addresses DC-01. NOTE: This action was completed on 12/17/08, but is being launched to collect objective evidence. Deliverable: Issue CGI Dedication forms for the TFLAN and HMI components. RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Roberts, Mark A - Assign - Completed with comments - 02/02/2009 1643 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 02/02/2009 1717 *Instructions:*	

ATTACHMENTS

Attachments

1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm
4. EM-RP--WRPS-TANKFARM-2008-0002.htm
5. Link to PER
6. RCA 2008-0279 ADDENDUM 5-19-09.pdf
7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
8. WRPS-PER-2008-0279.12 CLOSURE E-MAIL.msg
9. WRPS-PER-2008-0279.12_CLOSURE_CGI-03046.pdf
10. WRPS-PER-2008-0279.12_CLOSURE_CGI-03047.pdf
11. WRPS-PER-2008-0279.12_CLOSURE_CGI-03048.pdf
12. WRPS-PER-2008-0279.12_CLOSURE_CGI-03049.pdf
13. WRPS-PER-2008-0279.12_CLOSURE_CGI-03050.pdf
14. WRPS-PER-2008-0279.12_CLOSURE_CGI-03051.pdf
15. WRPS-PER-2008-0279.12_CLOSURE_CGI-03052.pdf
16. WRPS-PER-2008-0279.12_CLOSURE_CGI-03053.pdf
17. WRPS-PER-2008-0279.12_CLOSURE_CGI-03054.pdf
18. WRPS-PER-2008-0279.12_CLOSURE_CGI-03055.pdf
19. WRPS-PER-2008-0279.12_CLOSURE_CGI-03056.pdf

COMMENTS

Task# WRPS-PER-2008-0279.12

Poster	Roberts, Mark A (Bragg, David A) - 02/02/2009 1643		
	Completed		
	The required CGI dedication forms for the TFLAN and HMI components were completed and are attached as objective evidence. The PER originator was contacted by e-mail on 02/02/09 and informed of the disposition of corrective action WRPS-PER-2008-0279.12. A copy of that e-mail is also attached.		
Poster	Knight, Mark A (Bragg, David A) - 02/02/2009 1717		
	Concur		
	The required CGI dedication forms for the TFLAN and HMI components were completed and are attached as objective evidence. The PER originator was contacted by e-mail on 02/02/09 and informed of the disposition of corrective action WRPS-PER-2008-0279.12. This completes the corrective action.		
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 02/05/2009 1059		
	Steelman, Tracy L -- CLOSED		
	Reviewed and closed. tls 2/5/09		
TASK DUE DATE HISTORY			
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	02/16/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.	CGI-03046
ECN No.	ECN-724367, ECN-724362
Work Package No.	N/A
CGI Dash Nos.	
Rev No.	0
Reason for Revision	NA
	Page 1 of 5
Title:	Tank Farm MCS LAN Server PC
Key Words:	MCS, TFMCS, TFLAN, MPSS, HMI, PC

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
AZ271-WT-CP-104	NA	Dell Inc.	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
Dell MODEL 1600SC	NA	NA

Component Description:
HMI PC hardware including primary components; internal hardware such as motherboard, power supply, hard drive, Network Interface Card (NIC), video card and Windows 2000 operating system.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms and loss of signal alarms during waste transfers.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority:
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The LAN Server PC has the function of running continuously both the HMI operating system software & SQL Server software which the configured user application software uses as a support application.
Specifically, the LAN Server hardware functions to oversee the LAN functionality and provide a common network data storage.

Failure Effects on Item:

Loss of signal (LAN Failure)

Host Component Safety Function (if applicable):

DSA 4.4.7.1
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.

DSA 4.4.8.1
The identified safety function of the service water pressure detection systems is to

physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

The LAN Server PC is made up of multiple electronic sub-components which are interrelated and all are required for proper operation of the component.
Motherboard (failures result in loss of LAN Server operation).
Power supply (failures result in loss of LAN Server operation).
Hard drive (detected by OS and result in loss of LAN Server operation).
NIC (failure results in loss of signal alarm or loss of LAN Server operation).
Video card (failure results in loss of display data and loss of LAN Server operation).

Effects of Part/Component Failure on Component or System Safety Function:

Alarm signals are not displayed for operator monitoring.
Failures of the HMI PC result in shutdown of waste transfer operations per Alarm Response Procedure ARP-T-041-00002.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03046
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0	Reason for Revision NA	Page 4 of 5

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
UL, ITE	DSA RPP-13033	
Vendor Manuals:	Mfg./Supplier Information: NA	

Other:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03046

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. N/A

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Dell Power Edge Model 1600SC verified at Windows System Summary Screen	100% ✓	1	N/A	1	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on item.	100% ✓	1	N/A	1	Ø	Quality Control	RON COWGILL	12/16/08
At least 1 GB of internal memory.	Verified at Windows System Summary Screen	100% ✓	1	N/A	1	Ø	Quality Control	RON COWGILL	12/16/08
Windows 2000 Server software.	Verify at Windows System Summary Screen	100% ✓	1	N/A	1	Ø	Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

ER Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.	CGI-03047
ECN No.	ECN-724367, ECN-724362
Work Package No.	N/A
CGI Dash Nos.	
Rev No.	0
Reason for Revision	NA
	Page 1 of 5
Title:	Tank Farm MCS HMI Citect Server PC
Key Words:	MCS, TFMCS, TFLAN, MPSS, HMI, PC

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	N/A	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
See complete list		Dell Inc.	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
OPTIPLEX MODEL GX270	NA	NA

Component Description:
HMI/Server PC hardware including primary components; internal hardware such as motherboard, power supply, hard drive, Network Interface Card (NIC), video card, speakers, and Windows 2000 operating system.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms and loss of signal alarms during waste transfers.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority:
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03047
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0	Reason for Revision NA	Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The HMI/Server PC has the function of running continuously both the HMI operating system software & the configured user application software for processing alarms to be monitored by the Operator.
Specifically, the HMI/Server PC hardware functions to receive status or "change of state" of software tags, for LD alarm or LD failure from the system PLC's. In addition, the HMI/Server PC is responsible for detection of Loss of Signal from the PLC's or LAN server.

Failure Effects on Item:

Loss of signal or loss of display for LD alarms and LD failure alarms.
Loss of signal or loss of display for service water press switch alarms.

Host Component Safety Function (if applicable):

DSA 4.4.7.1
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.

DSA 4.4.8.1
The identified safety function of the service water pressure detection systems is to

physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

The HMI/Server PC is made up of multiple electronic sub-components which are interrelated and all are required for proper operation of the component.
Motherboard (failures result in loss of HMI operation).
Power supply (failures result in loss of HMI operation).
Hard drive (detected by OS and result in loss of HMI operation).
NIC (failure results in loss of signal alarm or loss of HMI operation).
Video card (failure results in loss of display data and loss of HMI operation).
Speakers (failure results in loss of audible alarm).

Effects of Part/Component Failure on Component or System Safety Function:

Alarm signals are not displayed for operator monitoring.
Failures of the HMI/Server PC result in shutdown of waste transfer operations per Alarm Response Procedure ARP-T-041-00002.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03047
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
UL, ITE	DSA RPP-13033	
Vendor Manuals:	Mfg./Supplier Information:	

Other:

REFERENCES:
list of ref's

LIST OF EIN's:
AZ271-WT-CP-~~102~~ 101 DTA 12/11/08
AZ271-WT-CP-103
A242-WT-CP-101
A242-WT-CP-~~102~~ 201 DTA 12/10/08
Internal hardware only (excluding peripherals and cables

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03047

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. N/A

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Dell model GX270 verified at Windows System Summary Screen.	100%	1	N/A	4	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on item.	100%	1	N/A	4	Ø	Quality Control	RON COWGILL	12/16/08
Greater than 512MB of internal memory.	Verify at Windows System Summary Screen	100%	1	N/A	4	Ø	Quality Control	RON COWGILL	12/16/08
Windows 2000 software.	Verify at Windows System Summary Screen	100%	1	N/A	4	Ø	Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: C.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

E.P. Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.	CGI-03048
ECN No.	ECN-724367, ECN-724362
Work Package No.	N/A
CGI Dash Nos.	
Rev No.	0
Reason for Revision	NA
Page	1 of 5
Title:	Tank Farm MCS HMI Citect Display Client PC
Key Words:	MCS, TFMCS, TFLAN, MPSS, HMI, PC

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
See complete list		Dell Inc.	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
OPTIPLEX MODEL GX150	NA	NA

Component Description:
HMI PC hardware including primary components; internal hardware such as motherboard, power supply, hard drive, Network Interface Card (NIC), video card, speakers, and Windows 2000 operating system.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms, and loss of signal alarms during waste transfers.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority:
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The HMI PC has the function of running continuously both the HMI operating system software & the configured user application software for processing alarms to be monitored by the Operator.
Specifically, the HMI PC hardware functions to receive status or "change of state" of software tags, for LD alarm or LD failure sent remotely from the I/O server software running on the Citect server. In addition, the HMI PC is responsible for detection of Loss of Signal from the Citect Server or LAN server.

Failure Effects on Item:

Loss of signal or loss of display for LD alarms and LD failure alarms.
Loss of signal or loss of display for service water press switch alarms and failure alarms.

Host Component Safety Function (if applicable):

DSA 4.4.7.1
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.

DSA 4.4.8.1

The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

The HMI PC is made up of multiple electronic sub-components which are interrelated and all are required for proper operation of the component.
Motherboard (failures result in loss of HMI operation).
Power supply (failures result in loss of HMI operation).
Hard drive (detected by OS and result in loss of HMI operation).
NIC (failure results in loss of signal alarm or loss of HMI operation).
Video card (failure results in loss of display data and loss of HMI operation).
Speakers (failure results in loss of audible alarm).

Effects of Part/Component Failure on Component or System Safety Function:

Alarm signals are not displayed for operator monitoring.
Failures of the HMI PC result in shutdown of waste transfer operations per Alarm Response Procedure ARP-T-042-00002.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03048
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
UL, ITE, CE mark	DSA RPP-13033	
Vendor Manuals:	Mfg./Supplier Information:	

Other:

REFERENCES:
list of ref's

LIST OF EIN's:
1 S242-WT-CP-101 - GX 260
2 219-S-WT-CMS-101
3 AW271-WT-CP-120
4 AP271-WT-CP-101
5 AZ271-WT-CP-~~101~~ 102 EM 12/11/08
6 AN271-WT-CP-123

Internal hardware only (excluding peripherals and cables

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03048

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. N/A

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Dell model GX150 verified at Windows Summary Screen. * See Comment	100%	1	N/A	6	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on item.	100%	1	N/A	6	Ø	Quality Control	RON COWGILL	12/16/08
Greater than 256MB internal memory.	Verified at Windows System Summary Screen	100%	1	N/A	6	Ø	Quality Control	RON COWGILL	12/16/08
Windows 2000 software.	Verified at Windows System Summary Screen	100%	1	N/A	6	Ø	Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

Note: 5242-WT-CP-101 model number was found to be a GX-260. The GX-260 met all other critical characteristics and exceeds the specification for a GX-150, therefore 5242-WT-CP-101 is acceptable. DT Heimberge 12/16/08

Initial Approvals:

Cog. Engr.: DT Heimberge 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberge 12/16/08

E.R. Hamm E.R. Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberge 12/16/08

Design Agent: N/A

Design Authority: DT Heimberge Date: 12/16/08

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03049

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Tank Farm MCS Network Media Converter	MCS, TFMCS, TFLAN, Network, MPSS, Fiber

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
Media Converter	HNF-6683, HNF-9682	Allied Telesis	REQ-51080

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
MC101XL	NA	NA

Component Description:
Local Area Network Media Converter. Connects Fiber Optic cabling to Copper/RJ-45/Ethernet cabling.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms and loss of signal alarms during waste transfers. The media converter is a component of that system.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.
NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03049
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

The Switch is responsible for transmitting leak detection information between the Programmable Logic Controllers, the Human Machine Interfaces, I/O Server and Alarm Server.

Failure Effects on Item:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS a Component of the system;
The media converter has the function of converting network communications signals being transmitted via ethernet CAT-5 cable to Fiber Optic compatible signals. It also functions in reverse. The media converter does not interpret the signal and also does not add or remove information from the LAN communications signal.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems,

raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.3, UL-60950-1, FCC Part 15 Class B.	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	**Mfg./Supplier Information:**	
See Other for Link.	Allied Telesis	

Other:

MC101XL
MC103XL
MC103LH
Fast Ethernet Media Converters
Installation Guide

http://www.alliedtelesyn.co.uk/media/datasheets/guides/mc100_family_ig_a_v4.pdf

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03049

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on front of component contains MC101XL	100%	1	N/A	** (23)	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on component power supply.	100%	1	N/A	** (23)	Ø	Quality Control	RON COWGILL	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** (23)	Ø	Quality Control	RON COWGILL	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** (23)	Ø	Quality Control	RON COWGILL	12/16/08
Support for ~~IEEE-802.1 and~~ IEEE-802.3. See Comment (A)	Vendor Data Sheet lists standards.	100%	1	N/A	** (23)		Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See the attached list for a Facility description and the number to test in each facility.

(A) IEEE-802.1 is the standard for port based network access control and is only applicable to the Cisco switches. Therefore it is being removed as a ~~cho~~ critical characteristic. 12/16/08 12/16/08

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

ER Hammu ER Hammu 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08 DT Heimberger

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03050

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Tank Farm MCS Network Media Converter	MCS, TFMCS, TFLAN, Network, MPSS, Fiber

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
Media Converter	HNF-6683, HNF-9682	Allied Telesis	REQ-51080

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
MC103XL	NA	NA

Component Description:
Local Area Network Media Converter. Connects Fiber Optic cabling to Copper/RJ-45/Ethernet cabling.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring Leak Detection alarms, power failure alarms and loss of signal alarms during waste transfers. The media converter is a component of that system.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.
NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03050
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

The Switch is repsonsible for transmiting leak detection information between the Programmable Logic Controllers, the Human Machine Interfaces, I/O Server and Alarm Server.

Failure Effects on Item:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The media converter has the function of converting network communications signals being transmitted via ethernet CAT-5 cable to Fiber Optic compatible signals. It also functions in reverse. The media converter does not interpret the signal and also does not add or remove information from the LAN communications signal.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems,

raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA. Component is installed in temperature controlled environment.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

NA

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03050
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.3, UL-60950-1, FCC Part 15 Class B.	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	**Mfg./Supplier Information:**	
See Other for Link.	Allied Telesis	

Other:

MC101XL
MC103XL
MC103LH
Fast Ethernet Media Converters
Installation Guide

http://www.alliedtelesyn.co.uk/media/datasheets/guides/mc100_family_ig_a_v4.pdf

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03050

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on front of component contains MC103XL	100%	1	N/A	** (11)	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on component power supply.	100%	1	N/A	** (11)	Ø	Quality Control	RON COWGILL	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** (11)	Ø	Quality Control	RON COWGILL	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** (11)	Ø	Quality Control	RON COWGILL	12/16/08
Support for ~~IEEE-802.1 and~~ IEEE-802.3. See comment (A)	Vendor Data Sheet lists standards.	100%	1	N/A	**		Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See attach list for a Facility description and the number to test in each facility.

(A) IEEE-802.1 is the standard for port based network access control and is only applicable to the Cisco switches. Therefore it is being removed as a critical characteristic. 12/16/08

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

E.R. Hammy E.R. Hammy 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08 DT Heimberger

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03051

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Tank Farm MCS Network Media Converter	MCS, TFMCS, TFLAN, Network, MPSS, Fiber

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
Media Converter	HNF-6683, HNF-9682	Allied Telesis	REQ-51080

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
MC103LH	NA	NA

Component Description:
Local Area Network Media Converter. Connects Fiber Optic cabling to Copper/RJ-45/Ethernet cabling.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms and loss of signal alarms during waste transfers. The media converter is a component of that system.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.
NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03051
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS a Component of the system;
The media converter has the function of converting network communications signals being transmitted via ethernet CAT-5 cable to Fiber Optic compatible signals. It also functions in reverse. The media converter does not interpret the signal and also does not add or remove information from the LAN communications signal.

Failure Effects on Item:

Failure of the media converter would prevent the transmission of the alarms signals and result in a loss of signal alarm condition.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems,

raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03051
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.3, UL-60950-1, FCC Part 15 Class B.	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	**Mfg./Supplier Information:**	
See Other for Link.	Allied Telesis	

Other:

MC101XL
MC103XL
MC103LH
Fast Ethernet Media Converters
Installation Guide

http://www.alliedtelesyn.co.uk/media/datasheets/guides/mc100_family_ig_a_v4.pdf

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03051

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on Switch is MC-103LH	100%	1	N/A	** (3)	Ø	Quality Control	Ron Cowgill	12/16/08
Approved for use per NEC.	NRTL Label on component.	100%	1	N/A	** (3)	Ø	Quality Control	Ron Cowgill	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** (3)	Ø	Quality Control	Ron Cowgill	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** (3)	Ø	Quality Control	Ron Cowgill	12/16/08
Support for ~~IEEE-802.1 and~~ IEEE-802.3. See Comment (A)	Vendor Data Sheet lists standards.	100%	1	N/A	** (3)		Quality Control	Ron Cowgill	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See attached list for the Facility description and the number to test in each facility.

(A) IEEE-802.1 is the standard for port based network access control and is only applicable for the Cisco Switch devices. Therefore it is being removed as a critical characteristic here. 12/16/08

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

E.R Hammon 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08 DT Heimberger

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03052

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Tank Farm MCS Network Media Converter	MCS, TFMCS, TFLAN, Network, MPSS, Fiber

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
Media Converter	HNF-6683, HNF-9682	Sixnet	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
ET-GT-5ES-2ST	NA	NA

Component Description:
Local Area Network Media Converter. Connects Fiber Optic cabling to Copper/RJ-45/Ethernet cabling.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring Leak Detection alarms, power failure alarms and loss of signal alarms during waste transfers. The media converter is a component of that system.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering

Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03052
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The media converter has the function of converting network communications signals being transmitted via ethernet CAT-5 cable to Fiber Optic compatible signals. It also functions in reverse. The media converter does not interpret the signal and also does not add or remove information from the LAN communications signal.

Failure Effects on Item:

Failure of the media converter would prevent the transmission of the alarms signals and result in a loss of signal alarm condition.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or

consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03052
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0	Reason for Revision NA	Page 4 of 5

Basis:

NA

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.3, UL-508/CSA, FCC Part 15	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	Mfg./Supplier Information:	
See Other for Link.	Sixnet	

Other:

Sixnet Slimline idustrial media converter data sheet.

http://www.sixnetio.com/solutions/general.htm?gclid=CLrEu7b9tpcCFQkiagodQFfYiQ

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03052

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on Switch is ET-GT-5ES-2ST	100%	1	N/A	** (1)	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on component.	100%	1	N/A	** (1)	Ø	Quality Control	RON COWGILL	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** (1)	Ø	Quality Control	RON COWGILL	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** (1)	Ø	Quality Control	RON COWGILL	12/16/08
Support for ~~IEEE 802.1 and~~ IEEE-802.3. See Comment (A)	Vendor Data Sheet lists standards.	100%	1	N/A	** (1)		Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See attached list for Facility description and number to test in each facility.

(A) IEEE 802.1 is the standard for port based network access control and is only applicable for the Cisco switch devices. Therefore, it is being removed as a ~~the~~ critical characteristic. 12/16/08

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: I.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/12/08

E.R. Hammon 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03053

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Tank Farm MCS Network Switch	MCS, TFMCS, TFLAN, Network, MPSS

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
LAN Switch	HNF-6683, HNF-9682	Cisco Systems Inc.	REQ-51080

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
2950	NA	NA

Component Description:
Local Area Network Switch

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
This LAN Switch is a component within the project W-314 Tank Farm Local Area Network (TFLAN) and is part of the Tank Farm MCS.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.
NA

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The network switch has the function of connecting network components which provide communications signals being transmitted via ethernet. The network switch does not interpret the signal and also does not add or remove information from the LAN communications signal.

Failure Effects on Item:

Failures prevent the transmission of information. Failures are detectable by the operator monitored Human Machine Interfaces as loss of signal alarms.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service

water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

Component is installed in temperature controlled environment.

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03053
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.1, IEEE-802.3, UL-1950	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	**Mfg./Supplier Information:**	
Series 2950 User Document Links. See Other for Link.	Cisco Systems Inc. www.cisco.com.	

Other:

Link to Model 2950 Vendor Manuals.
http://www.cisco.com/en/US/products/hw/switches/ps628/tsd_products_support_series_home.html

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03053

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on Switch is 2950	100%	1	N/A	** 15	Ø	Quality Control	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on component.	100%	1	N/A	** 15	Ø	Quality Control	RON COWGILL	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** 15	Ø	Quality Control	RON COWGILL	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** 15	Ø	Quality Control	RON COWGILL	12/16/08
Support for IEEE-802.1 and IEEE-802.3.	Vendor Data Sheet lists standards.	100%	1	N/A	** 15	Ø	Quality Control	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See attached list for Facility description and the number to test in each facility.

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberger 12/10/08

E.R. Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.	CGI-03054
ECN No.	ECN-724367, ECN-724362
Work Package No.	NA
CGI Dash Nos.	
Rev No.	0
Reason for Revision	NA
	Page 1 of 5
Title:	Tank Farm MCS Network Switch
Key Words:	MCS, TFMCS, TFLAN, Network, MPSS

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
LAN Switch	HNF-6683, HNF-9682	Cisco Systems Inc.	REQ-51080

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
3560	NA	NA

Component Description:
Local Area Network Switch

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):

This LAN Switch is a component within the project W-314 Tank Farm Local Area Network (TFLAN) and is part of the Tank Farm MCS.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering

Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

NA

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS a Component of the system;
The network switch has the function of connecting network components which provide communications signals being transmitted via ethernet. The network switch does not interpret the signal and also does not add or remove information from the LAN communications signal.

Failure Effects on Item:

Failures prevent the transmission of information. Failures are detectable by the operator monitored Human Machine Interfaces as loss of signal alarms.

Host Component Safety Function (if applicable):

Flammable Gas Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service

water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Loss of power, Loose Connections, Cross connections, Device Failure, Improper Configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Loss of signal.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA. Component is installed in temperature controlled environment.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

NA

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

NA

Basis:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03054
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-802.1, IEEE-802.3, UL-1950	RPP-13033 Rev 2-M	SK813001 thru SK812048
Vendor Manuals:	**Mfg./Supplier Information:**	
Series 3560 User Document Links. See Other for Link.	Cisco Systems Inc. www.cisco.com.	

Other:

Link to Model 3560 Vendor Data Sheet.
http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps5528/product_data_sheet09186a00801f3d7d.html

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03054

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer Part Number.	Model number on Switch is 3560	100%	1	N/A	** 1	Ø	QA	RON COWGILL	12/16/08
Approved for use per NEC.	NRTL Label on component.	100%	1	N/A	** 1	Ø	QA	RON COWGILL	12/16/08
Item is free from apparent damage.	Item is free from apparent damage.	100%	1	N/A	** 1	Ø	QA	RON COWGILL	12/16/08
Item is not suspect or counterfeit.	Item does not exhibit suspect or counterfeit characteristics.	100%	1	N/A	** 1	Ø	QA	RON COWGILL	12/16/08
Support for IEEE-802.1 and IEEE-802.3.	Vendor Data Sheet lists standards.	100%	1	N/A	** 1	Ø	QA	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** See the attached list for a Facility description and the list to test in each facility.

Initial Approvals:

Cog. Engr.: DT Heimberge 12/16/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/10/8

Design Authority: DT Heimberge 12/16/08

E.R Hamm ER Hamm 1/8/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
MO-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
MO-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03055

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	N/A	

Rev No.	Reason for Revision	
0	NA	Page 1 of 5

Title:	Key Words:
Misc TFMCS Cabling Componets	MCS, TFMCS, TFLAN, MPSS, HMI, PC

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:

Fiber Optic Cables with end Connectors, CAT-5 Cables with RJ-45 connectors, Video Cables with DB-15 connectors, Fiber Optic Patch Panels.

End Use Description:

The TF MCS system requires multiple mics cables to connection somponents and sub-components of the system. These cables include communicaitons (network CAT-5, Fiber Optic) and Video Cables.

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
NA	NA	NA	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
NA	NA	NA

Component Description:

NA

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):

Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms, and loss of signal alarms during waste transfers.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority:

Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03055
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 2 of 5

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS ITEM IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS A Component of the system;
The cabling connects components together to perfrom the overall functionality. The cabling transmits safety signal information in its electronic format.

Failure Effects on Item:

Failure of communications cable result in a loss of singal alarm condition.
Failure of video cables result in a loss of signal to display monitor resulting in a shutdown condition.

Host Component Safety Function (if applicable):

DSA 4.4.7.1
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.

DSA 4.4.8.1
The identified safety function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems

(e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

The HMI PC is made up of multiple electronic sub-components which are interrelated and all are required for proper operation of the component.
Motherboard (failures result in loss of HMI operation).
Power supply (failures result in loss of HMI operation).
Hard drive (detected by OS and result in loss of HMI operation).
NIC (failure results in loss of signal alarm or loss of HMI operation).
Video card (failure results in loss of display data and loss of HMI operation).
Speakers (failure results in loss of audible alarm).

Effects of Part/Component Failure on Component or System Safety Function:

Alarm signals are not displayed for operator monitoring.
Failures of the HMI PC result in shutdown of waste transfer operations per Alarm Response Procedure ARP-T-042-00002.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

NA

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NPH Design Reqs.:

NA

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03055
ECN No. ECN-724367, ECN-724362	Work Package No. N/A	CGI Dash Nos.
Rev No. 0 / Reason for Revision NA		Page 4 of 5

Required Safety Function:

NA

Basis:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
NA	DSA RPP-13033	
Vendor Manuals:	Mfg./Supplier Information:	
NA	NA	

Other:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03055

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. N/A

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Cables connected to network switch are CAT-5 with RJ-45 connectors	Verified by observation at each switch location.	**	1	N/A	17	Ø	Quality Control	RON COWGILL	12/16/08
Fiber optic cables are with SC or ST cable connectors	Verified by observation of fiber terminations at each switch location.	**	1	N/A	17	Ø	Quality Control	RON COWGILL see (A)	12/16/08
HMI computer stations have VGA Video cable between Monitor and Computer.	Verified by inspection of HMI station.	100%	1	N/A	9	Ø	Quality Control	RON COWGILL	12/16/08
Fiber optic patch panel located at each switch location	Each fiber cable has SC or ST connector and no observed damage.	**			17	Ø	QA	RON COWGILL	12/16/08

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

** Samples to be inspected will be identified at each location by the engineer and documented on the attached table.

(A) Some cable types different than drawing 5K813047. Issue documented and resolved on NCR # CH-08-NCR-038. DTA 12/17/08

Initial Approvals:

Cog. Engr.: DT Heimberger 12/10/08

Design Agent: N/A.

QA Engr.: T.L. Bennington 12/8/8

Design Authority: DT Heimberger 12/10/08

ER Hamm ER Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

	MEDIA CONVERTER MODEL NUMBER				SWITCH MODEL NUMBER		SWITCH FIBER OPTIC CABLE TYPE		VGA CABLE
FACILITY	MC101XL (CGI-03049)	MC103XL (CGI-03050)	MC103LH (CGI-03051)	ET-GT-5ES-2ST (CGI-03052)	2950 (CGI-03053)	3560 (CGI-03054)	MULTI-MODE (ORANGE)	SINGLE-MODE (YELLOW)	(CABLE CGI-03055)
MO-290	1	4			1			X	
219-S		1			1			X	1
242-S		1			1			X	1
252-S		1			1			X	
2704HV		2			1			X	
278-WA	1				1			X	
2506E2	5		3		1			X	
702-AZ CONTROL	3	1			1			X	4
242-A	1				1			X	1
241-AN-271	2	1			1			X	1
241-AP-271					1	1		X	1
241-AW-271	4				1		X		1
AW PLC A				1			X		
M0-266	1				1		X		
272-AW	3				1		X		
274-AW	1				1			X	
M0-283	1						X		

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM

CGI No.
CGI-03056

ECN No.	Work Package No.	CGI Dash Nos.
ECN-724367, ECN-724362	NA	

Rev No.	Reason for Revision	
0	NA	Page 1 of 8

Title:	Key Words:
Tank Farms MCS Applications Software	MCS, TFMCS, TFLAN, Network, MPSS, Software

Design Authority Information

Name/Company:	Location:	Phone:
Darrell Heimberger / WRPS	MO-282 / 200E	438-0711

Section 1 Part Information

Item No.:	Manufacturer:	Supplier:
NA	NA	NA

Mfg. Part/Model No.:	Supplier's P/N:
NA	NA

Part Description:
NA

End Use Description:
NA

Section 2 Component Information

Equipment No.:	Specification No.:	Manufacturer:	Past P.O. No.:
TF MCS Software	HNF-6780	NA	NA

Manufacturer's Part/Model No.:	Equipment Supplier (if different from manufacturer):	Equip. Supplier's Part No.:
NA	NA	NA

Component Description:
Application Software Configuration developed to operate on a Personal Computer work stations running Windows Operating System and Citect Human Machine Interface COTS software.

Section 3 Type of Replacement

Item has been evaluated and determined to be:

- ○ Identical
- ○ Similar
- ○ Alternate
- ◉ New Application

Document the basis for the above decision (include any references that are not in Section 7 of this form):
Procured & installed by W-314 project, the TFMCS is a computerized monitor and control system for monitoring alarms, power failure alarms, and loss of signal alarms during waste transfers. TF MCS Application Software is a component of the TFMCS. This application software is developed as configured software using the Citect Vendor COTS Software.

Section 4 Part/Component Safety Classification

Safety Class (SC) ☐ General Service ☐ Design Authority: WRPS BO Engineering
Safety Significant (SS) ☒

If part/component classification is different from host component/system, document basis.
NA

Section 5 Failure Effects Analysis

Part/Component Safety Function:

THIS Component IS ANALYZED AS A COMPONENT OF A BROADER SUBSYSTEM:
DSA 4.4.7.3 (functional requirement);
Displays Leak Detection alarm and LD failure alarm or the loss of signal alarm to the Operator.
DSA 4.4.7.4 (evaluation);
DSA Performance Criteria #2 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a leak detection alarm by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected leak detector.
Similarly, the second is the annunciation of an independent, secondary alarm for a leak detection failure, based on loss of power or failure of field component associated with the LDSTA, cables and probes.
The third method for assuring component safety function is the detection OF loss of signal along the transmission path for either of LD or LD failure signals.

DSA 4.4.8.3 (functional requirement);
Displays service water pressure switch alarm and failure alarm or the apparent loss of signal to the Operator.
DSA 4.4.8.4 (evaluation);
DSA Performance Criteria #3 discusses three unique and independent methods for assuring the component safety function listed above. The first is the annunciation of a service water pressure switch alarm (indicates waste backflow) by the change of state of a displayed variable or on-screen icon or pop-up status window for a connected device.
Similarly, the second is the annunciation of an independent, secondary alarm for a pressure switch failure, based on loss of power or failure of a field component.
The third method for assuring component safety function is the DETECTION OF loss of signal along the transmission path for either of alarm or failure signals.

==========

AS a Component of the system;
The application software has the function of running continuously to process signals monitored by the Operator. Specifically, the application software receives status or "change of state" information from the system PLC's connected to LD alarm or LD failure sensing instruments. This information is sent remotely from the PLC software to the Citect I/O Server running on the Citect server. Citect display clients receive information remotely from the Citect I/O server and Citect Alarm Server. In all cases, the application software is responsible for detection of Loss of Signal from its remotely connected device (Citect Servers, LAN server, PLC). The TFMCS software is responsible for monitoring and alarming on leak detection, power failure and loss of signal information within the system.

Failure Effects on Item:

Failures prevent the transmission and/or alarming of Leak, Loss of Power and Loss of signal conditions. Layered diagnostic routines ensure failures are detectable.

Host Component Safety Function (if applicable):

Flammable Gas Accitdent(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the frequency of a flammable gas accident.
Waste Transfer Leak Accident(Leak Detection): To detect the accumulation of waste leaked into a waste transfer-associated structure and to provide an alarm signal to initiate operator response, thus decreasing the consequence or a leak accident.
Waste Transfer Leak Accident(Service Water Pressure Detection):The identified safety

function of the service water pressure detection systems is to physically disconnect the waste transfer system from non-waste transfer systems, thus decreasing the frequency or consequences of a waste transfer leak accident. Service water pressure detection systems limit the backflow of waste into non-waste transfer systems (e.g., service water systems, raw water supply systems) where a waste transfer leak accident could occur. The service water pressure detection system includes two isolation valves with a pressure switch between the valves. If waste flows past the first isolation valve (because the valve was misaligned, failed, or leaked), the pressure switch will detect an increase in pressure and actuate an alarm to notify operators of the backflow (i.e., misroute) so that the waste transfer pumps can be shut down. In some installations, the pressure switch sends an alarm signal to the MPSS to actuate automatic waste transfer pump shutdown.

Failure Mechanism(s):

Logic Programming Error. Misinterpretation of requirements. Inappropriate interface configuration.

Effects of Part/Component Failure on Component or System Safety Function:

Alarm condition not recognized and/or annunciated.
Loss of signal not detected and/or annunciated.

Section 6 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required: ○ Yes ◉ No

If Yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

NA. Software is not subject to environmental qualifications.

Required Safety Functions:

NA

Qualification Period:

NA

Basis:

NA

Natural Phenomena Hazard (NPH) Design Required: ○ Yes ◉ No

If Yes: NPH Design Requirements

Performance Category:

NA. There are no SSCs in the DSA (RPP-13033) that are required to survive an NPH earthquake. The design requirements in TFC-ENG-STD-06 for NPH are applied based on performance category (PC) 1. For design loads this is equivalent to Uniform Building Code (UBC) requirements. Design requirements for NPH wind loads are not applied since this equipment is installed in a qualified building. Since this component is installed in the building the component itself is not exposed to wind, so NPH wind loads do not apply.

NPH Design Reqs.:

NA

Required Safety Function:

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)		CGI No. CGI-03056
ECN No. ECN-724367, ECN-724362	Work Package No. NA	CGI Dash Nos.
Rev No. 0	Reason for Revision NA	Page 4 of 8

NA

Basis:

NA

Section 7 References (for Safety Classification and Suitability Evaluation)

National Codes/Standards:	Safety Analysis Report (SAR):	Drawings:
IEEE-730, IEEE-830, IEEE-828	RPP-13033 Rev 2-M	RPP-6921
Vendor Manuals:	**Mfg./Supplier Information:**	
RPP-6921. Software Design Description.	NA	

Other:

RPP-18916, TFMCS Operations and Maintenance Manual.
RPP-6764, TFMCS Software Quality Assurance Plan.
HNF-6780, TFMCS Project Developement Specification.
RPP-6921, TFMCS Software Design Description
RPP-34719, System Design Description Tank Farm Monitoring and Control System

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03056

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Section 8 Verification of Critical Characteristics

Critical Characteristics					Receipt Inspection/Test Results				
Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
Approved Design Specificaiton.	HNF-6780, Project Development Specification and applicable ECN's, released in HDCS.	100%	1	N/A	N/A	N/A	Engineering	HNF-6780 Rev. 2 Acc #NA02685415 With approved ECN's ECN-724362R0 ACC #DA04061210 ECN-724934R0 ACC #DA05505815 ECN-725029R0 ACC #DA05691598 ECN-725041R0 ACC #DA05733182 ECN-725259R0 ACC #DA06300196 ECN-725300R0 ACC #DA06450609 WINKelman	12-15-08
Approved Quality Assurance and Configuration Management Plan.	RPP-6764, SQAP for MCS, released in HDCS.	100%	1	N/A	N/A	N/A	Engineering	RPP-6764 Rev 3 Acc #DA04073645 WINKelman	12-15-08
Approved Software Design Description.	RPP-6921, MCS Software Design Document, released in HDCS.	100%	1	N/A	N/A	N/A	Engineering	RPP-6921 Acc #NA639398 WINKELMAN	12-15-08
Documented Change Control of Application Software.	Applicable ECN's to RPP-6921 released in HDCS.	100%	1	N/A	N/A	N/A	Engineering	S/W Release 2.0.1 ECN-724216-R0 ACC #DA03895421 ACC #DA04036878 S/W Release 2.1 ECN-722557-R2 ACC #DA03950532 ACC #DA04058238	

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03056

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

Critical Characteristic for Acceptance[1] / Verification Document	Acceptance Criteria/ Tolerances	Number to Test	Accept Method	Test Procedure or RR No.[2]	No. Tested	No. Failed	Verifying Organization	Printed Name Signature	Date
								S/W Release 2.1.1 ECN-724216-R1 ACC #DA04307793 ACC #DA04244994 and ECN-724216-R2 ACC #DA04307762 ACC #DA04307912 S/W Release 2.2 ECN-724456-R0 ACC #DA04308045 ACC #DA04336179 S/W Release 3.0 ECN-724568-R0 ACC #DA05004657 ACC #DA04624414 and ECN-724570-R0 ACC #DA04817929 ACC #DA05004654 and ECN-724570-R1 ACC #DA05004609 ACC #DA04840935 S/W Release 3.1 ECN-725003-R0 ACC #DA05691683 ACC #DA05993220 S/W Release 3.2 ECN-724481-R0 ACC #DA06756949 ACC #DA05993444	

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03056

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

								S/W Release 3.3 ECN-725118-R1 ACC #DA05961563 ACC #DA05993213 and ECN-725118-R0 DA05923010 DA05993167 S/W Release 3.4 ECN-725122-R0 ACC #DA06024317 ACC #DA06110741 S/W Release 3.4.2 ECN-725374-R0 ACC #DA07355455 ACC #DA07019222 S/W Release 3.4.3 ECN-725518-R0 ACC #DA07034842 ACC #DA07464836 S/W Release 3.4.4 ECN-725380-R0 ACC #DA07159410 ACC #0809090607 S/W Release 3.4.5 ECN-725381-R0 ACC #0809090608 ACC #DA07303734 S/W Release 3.4.6 ECN-725729-R0 ACC #0808260064 ACC #0808060021	

COMMERCIAL GRADE ITEM UPGRADE DEDICATION FORM (cont.)

CGI No. CGI-03056

CGI Dash Nos.

ECN No. ECN-724367, ECN-724362

Work Package No. NA

								FCN-100694 ACC #DA06109932 Winkelman Winkelman 12-15-08	
Provides alarm on loss of signal.	a) Alarm annuciation with post-installation test. b) Functional Test prior to system acceptance.	100%	1	N/A	N/A	N/A	Engineering	Documents in IDMS: W314-STRR-1.1 Rev 0e, which references the following work packages in CHAMPS: WFO-WO-06-002081 WFO-WO-06-002083 WFO-WO-06-002555 CLO-WO-07-0001 WFO-WO-06-002501 (performs functional test TF-FT-259-023 Rev A-1) Winkelman 12-15-08 WINKELMAN	

Notes:

1 Critical characteristics for acceptance to be verified during post installation testing are identified by an asterisk*.

2 P.O. Receiving report number.

Method:

1. Special Test and Inspection
2. Commercial Grade Survey
3. Source Verification
4. Vendor/Item History
5. Receipt Inspection

Comments:

Initial Approvals:

Cog. Engr.: DT Heimberger 12/15/08

Design Agent: N/A

QA Engr.: T.L. Bennington 12/16/8

Design Authority: DT Heimberger 12/15/08

E.R. Hamm E.R. Hamm 1/7/2009

Final Approvals:

Cog. Engr.: DT Heimberger 12/16/08

Design Agent: N/A

Design Authority: DT Heimberger Date: 12/16/08

Task# WRPS-PER-2008-0279.13

E-STARS[R] Report
Task Detail Report
08/06/2009 1556

TASK INFORMATION			
Task#	WRPS-PER-2008-0279.13		
Subject	WRPS-PER-2008-0279; SIG; DC-01-02 - Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE statu		
Parent Task#	WRPS-PER-2008-0279	**Status**	CLOSED 02/05/2009
Reference	WRPS-PER-2008-0279	**Due**	02/16/2009
Originator	^PER CAs	**Priority**	Medium
Originator Phone		**Category**	PER
Origination Date	01/29/2009 0823	**Generic1**	None
Remote Task#		**Generic2**	None
Deliverable	PER Review	**Generic3**	None
Class	None	**View Permissions**	Global
Instructions	*No Instructions*		

ROUTING LISTS		
1	Corrective Action	Inactive
	DC-01-02 - Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. This action addresses DC 01. NOTE: This action was completed on 1/7/09, but is being launched to collect objective evidence. Deliverable: Issue Interoffice Memo, WRPS-0900045, "Commercial Grade Item Upgrade Dedication of Tank Farm Local Area Network and Human Machine Interface Components of the Tank Farm Monitoring and Control System for Double-Shell Tank Waste Transfers." RESPONSIBLE MANAGER: When this corrective action is complete, enter a closure statement in E-STARS and close the E-STARS subtask. Refer to the Problem Evaluation Request procedure TFC-ESHQ-Q-C-C-01, Section 4.4 for closure documentation requirements	
	• Roberts, Mark A - Assign - Completed with comments - 02/02/2009 1708 *Instructions:*	
	• Knight, Mark A - Review - Concur with comments - 02/02/2009 1719 *Instructions:*	

ATTACHMENTS

Attachments

1. 2009-0279 - E-mail to Add CA to NTS Report (2009-0387).htm
2. EM-RP--WRPS-TANKFARM-2008-0002 FINAL.mht
3. EM-RP--WRPS-TANKFARM-2008-0002 update.htm
4. EM-RP--WRPS-TANKFARM-2008-0002.htm
5. Link to PER
6. RCA 2008-0279 ADDENDUM 5-19-09.pdf
7. WRPS-PER-2008-0279 CLOSURE ROOT CAUSE ANALYSIS REPORT.pdf
8. WRPS-PER-2008-0279.13 CLOSURE E-MAIL.msg
9. WRPS-PER-2008-0279.13_CLOSURE_INTEROFFICE_MEMO_WRPS_-_0900045_.pdf

COMMENTS

Poster	Roberts, Mark A (Bragg, David A) - 02/02/2009 1708
	Completed
	The required Issue Interoffice Memo, WRPS-0900045, for the TFLAN and HMI components was released and is attached as objective evidence. The PER originator was contacted by e-mail on 02/02/09 and informed of the disposition of corrective action WRPS-PER-2008-0279.13. A

Message

From: Bragg, David A

Sent: Monday, February 02, 2009 4:37 PM

To: Knight, Mark A

Cc: Roberts, Mark A

Subject: Closure of WRPS-PER-2008-0279.12 (SIG)

Mark,

WRPS-PER-2008-0279.12 has the following action:

DC-01-01 -Prepare and approve Commercial Grade Item (CGI) Dedication forms for the TFLAN and HMI components. This action addresses DC-01. NOTE: This action was completed on 12/17/08, but is being launched to collect objective evidence.

Deliverable: Issue CGI Dedication forms for the TFLAN and HMI components.

This action was completed in CH2M-PER-2008-1728.5 (RES), but was carried over into WRPS-PER-2008-0279.12 (SIG) for purposes of documentation on the SIG PER. The same 11 CGIs (with Ernie Hamm's approval signature) CGI-3046 - 3056 were attached as objective evidence. This corrective action, due 02/10/09, will now be submitted for closure.

Thanks,

David Bragg

Task# WRPS-PER-2008-0279.13

	copy of that e-mail is also attached.		
Poster	Knight, Mark A (Bragg, David A) - 02/02/2009 1719		
	Concur		
	The required Issue Interoffice Memo, WRPS-0900045, for the TFLAN and HMI components was released and is attached as objective evidence. The PER originator was contacted by e-mail on 02/02/09 and informed of the disposition of corrective action WRPS-PER-2008-0279.13. This completes the corrective action.		
Poster	^PER CAs (Steelman, Tracy L (inactive)) - 02/05/2009 1059		
	Steelman, Tracy L -- CLOSED		
	Reviewed and closed. tls 2/5/09		
TASK DUE DATE HISTORY			
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	02/16/2009 0000
Modified	01/29/2009 0823 - ^PER CAs	**New Due Date**	01/09/2010 0000
SUB TASK HISTORY			
No Subtasks			

-- end of report --

Message

From: Bragg, David A

Sent: Monday, February 02, 2009 5:03 PM

To: Knight, Mark A

Cc: Roberts, Mark A

Subject: Closure of WRPS-PER-2008-0279.13 (SIG)

Mark,

WRPS-PER-2008-0279.13 has the following action:

DC-01-02 - Document completion of CGI Upgrade Dedication activities to restore the TFLAN and HMI components to OPERABLE status so they may be used for leak detection monitoring during Double-Shell Tank waste transfers. This action addresses DC 01. NOTE: This action was completed on 1/7/09, but is being launched to collect objective evidence.

Deliverable: Issue Interoffice Memo, WRPS-0900045, "Commercial Grade Item Upgrade Dedication of Tank Farm Local Area Network and Human Machine Interface Components of the Tank Farm Monitoring and Control System for Double-Shell Tank Waste Transfers."

This action was completed in CH2M-PER-2008-1728.5 (RES), but was carried over into WRPS-PER-2008-0279.13 (SIG) for purposes of documentation on the SIG PER. The same Interoffice Memo WRPS-0900045 was attached as objective evidence. This corrective action, due 02/10/09, will now be submitted for closure.

Thanks,

David Bragg

washington river protection solutions

INTEROFFICE MEMORANDUM

WRPS-0900045

Date: January 7, 2009

To: N. Brosee, Manager

From: D. T. Heimberger, System Engineer

Subject: COMMERCIAL GRADE ITEM UPGRADE DEDICATION OF TANK FARM LOCAL AREA NETWORK AND HUMAN MACHINE INTERFACE COMPONENTS OF THE TANK FARM MONITORING AND CONTROL SYSTEM FOR DOUBLE SHELL TANK WASTE TRANSFERS

The purpose of this memo is to report completion of the commercial grade item upgrade dedication activities necessary to allow Operations to restore the Tank Farm Local Area Network (TFLAN) and Human Machine Interface (HMI) components of the Tank Farm Monitoring and Control System (TFMCS) to OPERABLE status so they may be used for leak detector monitoring during Double Shell Tank (DST) waste transfers. This equipment has not been OPERABLE since a TSR violation was declared on November 20th, 2008 due to inadequate documentation associated with the TFMCS system.

BACKGROUND:

The TFMCS system was designed and installed by Project W-314 from 2000 to 2005. The system consists of hanging style leak detector probes, located in RCRA compliant pump pits, valve pits, and pipe encasements. The project also added two Safety Significant (SS) and one General Service (GS) programmable logic controllers (PLCs) in each farm with the leak detectors signals hooked to the SS PLCs and other process equipment connected to the GS PLC. HMI operator interfaces were installed and both the HMIs and PLCs connected to a new Ethernet based network (TFLAN), installed by Lockheed Martin Services Incorporated (LMSI). TFLAN is similar to the Hanford Local Area Network (HLAN), but is limited to TFMCS process monitoring signals.

In the original design, the safety function of shutting down the transfer pump was performed by the leak detector probes and the PLCs, which were designed and procured as safety class components but were downgraded to safety significant components with the adoption of the Documented Safety Analysis (DSA). The pump shutdown function was performed through direct PLC to PLC communication that did not rely on communication across the TFLAN Ethernet network. In this configuration, the TFLAN and HMIs were General Service components and served to provide Operators an indication that an event had occurred.

To simplify the testing process, a decision was made in 2006 to turn over the TFMCS system for leak detection monitoring only, as a first step to turnover of the entire system for pump control. In this configuration, the TFLAN and HMI components of the TFMCS are relied upon to display leak detector alarms, with the pump shutdown action being performed manually by Operators. In this

mode of operation, TFLAN and the HMIs perform a safety function of displaying a leak detection system alarm, and are considered safety significant. Turnover of the leak detector monitoring function began in October 2006. Since December 2007, the leak detection monitoring function has been implemented in all DST farms. Since that time, Operations has used the leak detectors, PLCs, TFLAN, and HMIs to monitor leak detection and service water pressure detection signals during many transfers within and between DST farms.

SYSTEM REQUIREMENTS:
Per the performance criteria in the Documented Safety Analysis (DSA), RPP-13033, and the Technical Safety Requirements (TSR), HNF-SD-WM-TSR-006, a leak detection system alarm shall be indicated at a location that can be monitored. Per DSA Section 4.4.7.4.2, to ensure the leak detection system performs its safety function, the alarm conditions that must be apparent to the Operator at the annunciation point are:

- Detect a leak
- Detect a loss of power
- Detect a loss of signal

TSR VIOLATION:
During the time of the transfer from the 219-S Laboratory to SY Farm, questions arose about the procurement pedigree of the TFLAN portion of the TFMCS system and whether TFLAN met the Enhanced quality requirement of the Safety Equipment List (SEL) as outlined in RPP-8792. In the subsequent investigation, the required paperwork to allow these components to be used in a Safety Significant capacity could not be recovered from the Project W-314 files. Therefore, a TSR violation (EM-RP-WRPS-TANK FARM -2008-0002) was declared that stated that the documentation required to upgrade the TFLAN and HMI components to Safety Significant were not prepared and issued.

PROCEDURAL REQUIREMENTS:
Requirements for commercial grade item dedication are contained in the following procedures:

- TFC-PLN-02, *Quality Assurance Program Description*
- TFC-BSM-CP_CPR-C-06, *Procurement of Item (Materials)*
- TFC-ENG-DESIGN-C-15, *Commercial Grade Item Upgrade Dedication*

a. TFC-PLN-02 (QAPD), Section 7.3.12, provides the implementing requirements for procuring and accepting commercial grade items and refers to TFC-ENG-DESIGN-C-15 for additional instruction. The QAPD states that this procedure establishes the dedication process, dedication requirements, and related responsibilities <u>for the use of commercial grade items as safety components, and having a quality assurance level designation of Full Quality, in safety or safety significant applications</u> at the TOC. The QAPD as written can be interpreted to mean that only safety significant items requiring Full Quality as specified in the Safety Equipment List (SEL), RPP-8792, require formal CGI dedication. The analysis in the SEL determined TFLAN, the HMIs, and HMI software are not failsafe but a failure is readily detectable. Since a failure is readily detectable, the components do not need to meet the requirements for Full Quality, but are identified as being Enhanced Quality.

b. TFC-BSM-CP_CPR-C-06 provides the requirements for procurement of items. It governs the requirements for new procurements, rather than the requirements for upgrading a previously procured item. The procedure is consistent with the QAPD in terms of which Quality Levels require CGI dedication (Full Quality only). However, this procedure contains additional requirements that affect the upgrade of commercial grade items that are not found in either the QAPD or in other implementing procedures.

Section 4.1, Develop Bill of Materials or Material Requisition, includes the following key requirements:

20. Determine if the items require commercial grade dedication for use in a safety application Refer to Section 4.5 for guidance.

a. If the item is to be upgraded to Full Quality (QL-1 or QL-2 in Passport) for Safety Significant or Safety Class applications, complete a Commercial Grade Item Upgrade Dedication documentation (A-6004-544), as required, with appropriate safety classification, in accordance with TFC-ENG-DESIGN-C-15.

b. ...

c. ...

NOTE: Items procured as Commercial Quality (QL 0) may not be upgraded for Enhanced Quality or Full Quality unless specifically approved by the Chief Engineer and by the Quality Assurance manager in accordance with Section 4.6 (note: section 4.6 does not exist in procedure – probably should be 4.5).

Section 4.5, Commercial Grade Items, includes the following requirements. Steps 2 and 5 contain the key requirements highlighted in bold:

Evaluate whether a commercial grade item is:

- *Not subject to design or specification requirements unique to nuclear facilities*
- *Used in applications other than nuclear facilities*
- *Ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (e.g., a catalog or national standard such as American Society for Testing and Materials).*

If the item meets the above criteria, procure as a commercial grade item.

NOTE: ***For items designated Full-Quality in safety class and safety significant structures, systems, and components, it shall be demonstrated as suitable for use in its intended application.*** *In accordance with TFC-PLN-03, this requires a documented engineering evaluation to establish and verify critical*

characteristics before the item is relied on for operation. Critical design characteristics and appropriateness of the item for use shall be verified (e.g., inspection, testing). Refer to TFC-ENG-DESIGN-C-15 for the commercial grade item dedication process.

...

If "existing" material without receipt inspection (tagging) will be installed in an application requiring Enhanced or Full Quality (QL-1, 2, or 3) designation, upgrade that material in accordance with the following:

a. ***If applicable, generate a QAIP*** *specifying the inspection criteria by which the item shall be evaluated.*

b. Generate an upgrade letter *referencing the QAIP* ***and obtain approval by the Chief Engineer and by the Quality Assurance manager.***

c. Perform the inspection in accordance with the QAIP and TFC-ESHQ-Q_INSP-C-04.

NOTE: Both the upgrade letter and QAIP shall be attached to the BOM/MR.

d. ***For items to be upgraded to Full Quality only, complete the upgrade via the commercial grade item upgrade process.*** *Refer to TFC-ENG-DESIGN-C-15 for requirements to upgrade materials.*

NOTE: This is not intended to allow procurement of material at Commercial Quality (QL 0) to bypass the normal procurement process but is intended to allow prudent use of existing material through an evaluation process to support use in higher quality level applications.

Thus, this procedure only requires CGI upgrade dedication for items designated Full Quality. However, the key additional requirement from this procedure is for an upgrade letter approved by the Chief Engineer and Quality Assurance Manager for "existing" material without receipt inspection to be used in a system requiring Enhanced Quality, which is the case for the TFLAN and HMI components.

c. The final key procedure is TFC-ENG-DESIGN-C-15, Commercial Grade Item Upgrade Dedication. This procedure was revised in April 2008 to modify its scope to apply to items having a Quality Assurance Level designation of both Full and Enhanced in safety significant applications. This change made the requirements of this procedure inconsistent, albeit more conservative, than the QAPD and other implementing procedures. The key requirement from this procedure is therefore to complete a CGI Upgrade Dedication Form for commercial grade items used in safety significant applications and having Enhanced Quality requirements.

Thus, since the TFLAN and HMI components of the TFMCS are identified as requiring Enhanced Quality in the SEL, RPP-8792, the requirements from the above procedures that are necessary to complete the requisite documentation are:

i) Complete an upgrade letter approved by the Chief Engineer and Quality Assurance Manager to allow the use of existing equipment of uncertain initial quality level that may or may not have received receipt inspection in a system requiring Enhanced Quality in accordance with TFC- BSM-CP_CPR-C-06.
ii) Prepare CGI Upgrade Dedication Forms for the TFLAN and HMI components of the TFMCS in accordance with TFC-ENG-DESIGN-C-15.

ACTIONS TAKEN:
In order to satisfy the first requirement, Internal Memorandum WRPS-0800249, *Upgrade Letter for Use of Existing Tank Farm Monitoring and Control System (TFMCS) Components*, was issued on December 15, 2008 that provided the justification for upgrading the existing TFLAN and HMI components that have an uncertain initial Quality Level for use in a system that requires Enhanced Quality (QL-3). This letter was approved by the Chief Engineer and by the Quality Assurance Manager.

Next, Commercial Grade Item (CGI) Upgrade Dedication forms were prepared to allow the components to be used as Safety Significant items. These forms documented the equipment safety function, the equipment failure roles, their critical characteristics, and the verification method by which the equipment satisfies the critical characteristics. These forms were prepared with the input of the System Engineer, the Engineering Discipline Lead, Subject Matter Experts, and Engineering Management and were approved by the Quality Assurance organization. Walk-downs were then performed with Quality Control personnel to verify the critical characteristics and all the CGI forms have been approved. The Table 1 below provides a cross reference from the TFMCS component to the applicable CGI form:

TABLE 1. TFMCS Component and CGI Form Number

COMPONENT NAME	MANUFACTURER	MODEL NUMBER	CGI FORM NUMBER
Switch	Cisco Systems	2950	CGI-03053
	Cisco Systems	3560	CGI-03054
Media Converter	Allied Telesis	MC101XL	CGI-03049
	Allied Telesis	MC103XL	CGI-03050
	Allied Telesis	MC103LH	CGI-03051
	Sixnet	ET-GT-5ES-2ST	CGI-03052
Computers	Dell Corporation	GX-150	CGI-03048
	Dell Corporation	GX-270	CGI-03047
	Dell Corporation	PowerEdge 1600	CGI-03046
Software	Citect/Windows	N/A	CGI-03056
Misc Interconnecting Cables	Various	N/A	CGI-03055

Based upon the approval of Internal Memorandum WRPS-0800249, the Quality Level of the items identified in Table 1 have been upgraded to Enhanced. Completion of the CGI forms have identified the necessary critical characteristics of the components to ensure that they perform their safety function and have verified and documented that the components meet those critical characteristics. The TFLAN and HMI components, therefore, have the necessary documentation in place for use in a safety significant application and are able to perform their safety function. The transfer pre-requisites and transfer actions outlined in Limiting Conditions of Operation (LCO) 3.1.1, *Transfer Leak Detection,* and Administrative Control AC 5.11, *Transfer Controls,* will further ensure the leak detection and TFMCS system are OPERABLE for leak detection monitoring during future DST waste transfers.

If you have any questions regarding this matter, please contact Darrell Heimberger at 438-0711.

DTH : FAM

cc: H. S. Berman
M. A. Knight
E. R. Hamm
RLN File/LB