



U.S. Department of Energy
Office of River Protection

P.O. Box 450
Richland, Washington 99352

03-OSR-0033

Mr. R. F. Naventi, Project Manager
Bechtel National, Inc.
2435 Stevens Center
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC-01RV14136 – AUTHORIZATION BASIS (AB) MANAGEMENT ASSESSMENT INSPECTION REPORT, A-03-OSR-RPPWTP-007, CONDUCTED JANUARY 6, 2003, THROUGH JANUARY 15, 2003

Reference: BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Authorization Basis Consistency with the Evolving Design," CCN: 045029, dated November 14, 2002.

This letter forwards the U.S. Department of Energy, Office of River Protection (ORP) results of the subject inspection. The inspection team reviewed the results of the commitments described in the Reference. In the Reference, Bechtel National, Inc. (BNI) stated immediate compensatory action was taken by Engineering management to prevent additional design documentation issuance without review against all information in the Preliminary Safety Analysis Report (PSAR) descriptive information. Also, among other things, the Reference stated an AB consistency review on all issued primary drawings would be conducted.

The ORP inspection focused on reviewing the implementation of commitments made in the Reference. The inspectors concluded the actions described in the letter were mostly completed as committed. The inspectors also identified several implementation issues needing further management attention. These issues resulted in four Findings and three Assessment Follow-up Items (AFI). The Findings are documented in the Notice of Finding (Enclosure 1). Details of the inspection, including Findings, are documented in the Inspection Report (Enclosure 2).

In recent discussions, BNI has requested further reduction to the AB Change controls described in RL/REG-97-13, *Office of River Protection Position on Contractor-Initiated Changes to the Authorization Basis*. Based on the Findings and AFIs, ORP has concluded further reduction in these controls is not warranted at this time. BNI must first demonstrate a consistent ability to perform to the existing Change control requirements prior to further reduction being considered by ORP.

The Findings involved (1) failure to ensure that information related to Authorization Basis Change Notices (ABCN) and Safety Evaluations were readily available for ORP review; (2) failure to perform Safety Evaluations when required; (3) failure to ensure Safety Evaluations were documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation could identify the technical issues considered during the Safety Evaluation and basis for the determination; and (4) failure to ensure that ABCNs submitted to ORP include a summary of the Safety Evaluation.

The AFIs involved the following three subjects: (1) the inspectors' examination of Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, governing the AB consistency review process revealed that the guidance in the procedure for filling out the safety screening forms was not specific in several areas, resulting in Safety Checklists being filled out in a wide variety of different ways; (2) Procedure 24590-WTP-GPP-SREG-002, Revision 4, *Authorization Basis Maintenance*, contains confusing information regarding summarizing the results of the safety evaluation and Form 24490-SREG-F00004, *Authorization Basis Change Notice* provides direction that fails to address regulatory requirements to provide summary results; and (3) while the AB change training described in the Contractor's letter (Reference) was implemented in a timely manner, the effectiveness of this training was limited by its lack of consistency with regulatory commitments and the Contractor's implementing procedure. Effectively addressing the weaknesses described in these three follow-up items is particularly important because they were significant contributors to the identified Findings in this inspection.

If you have any questions, please contact me, or your staff may contact Walt Pasciak, WTP Safety Regulation Division, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

OSR:WJP

Enclosures (2)

cc w/encls:
W. R. Spezialetti, BNI

NOTICE OF FINDING

During performance of an inspection of the Authorization Basis (AB) Management Assessment conducted January 6 through 15, 2003, at the Contractor's offices, the U.S. Department of Energy (DOE), Office of River Protection (ORP) identified the following:

Contract No: DE-AC27-01RV14136¹ states in Standard 7 Section (e) (2) (iii) the Contractor's Integrated Safety Management Plan (ISMP) shall conform with RL/REG-97-13, *Office of River Protection Position on Contractor-Initiated Changes to the Authorization Basis*. 24590-WTP-ISMP-ESH-01-001, Rev 2b, *Integrated Safety Management Plan*, dated December 19, 2002 implements this commitment in Section 3.3.3, Changes to the Authorization Basis. Integrated Safety Management Plan (ISMP) 24590-WTP-ISMP-ESH-01-001, Revision 2b, Section 3.3.3.1.a states the Contractor may make revisions to the AB associated with changes to the facility without prior approval of DOE provided certain evaluation and documentation requirements are met:

1. Section 3.3.3.1.a.2.ii of the ISMP states: "Documentation will be retained and readily available for DOE review. During the inspection it was determined that documents were not readily available for DOE review. In several cases incomplete safety checklists were provided to the inspectors and in other cases Contractor staff were not aware if safety evaluations had been prepared and where they were located. Below are two specific examples:
 - Design Document No. 24590-LAW-M8-C5V-00005, Revision 1 – Changes were made to the LAW Vitrification Building V&IDs associated with C3 to C5 inbleed drawings on November 15, 2002, and no Safety Checklist for Design was readily available from the electronic database management system for DOE review.
 - Design Document No. 24590-PTF-M6-PWD-00057, Revision 1 – Changes were made to P&IDs for the PTF Plant Wash & Disposal Underground Transfer Lines on November 21, 2002, and no Safety Checklist for Design was readily available from the electronic database management system for DOE review.

Failure to fully implement the requirements of Section 3.3.3.1.a.2.ii of the ISMP is considered a Finding. (A-03-OSR-RPPWTP-007-F01)

2. Section 3.3.3.1.a.1 of the ISMP states that the Contractor may make revisions to the authorization basis associated with changes to the facility without prior approval of DOE provided a safety evaluation is performed.

The following is an example where changes were made to the facility that were inconsistent with the AB and revisions to the AB were not made in accordance with Section 3.3.3.1.a.1 of the ISMP. Specifically, for the review of the WESP unit associated with Design Document No. 24590-HLW-M6-HOP-00002, no safety evaluation was performed.

¹ Contract No. DE-AC27-01RV14136 between the U.S. Department of Energy and Bechtel National, Inc., dated December 11, 2000.

Failure to perform a safety evaluation as required by Section 3.3.3.1.a.1 of the ISMP is considered a Finding. (A-03-OSR-RPPWTP-007-F02)

3. Section 3.3.3.1 a.1 of the ISMP states in part: “The format, content, and level of detail associated with an acceptable “safety evaluation” is highly dependent on the nature of the revision to the authorization basis, but in all cases, the safety evaluation must provide the rationale that demonstrates 1.i. through 1. viii. are met.” Items 1.i through 1.viii are the criteria permitting the Contractor to make changes without prior DOE approval of the change. Section 3.3.3.1.a.2.iii of the ISMP states: “Safety evaluations should be documented in sufficient detail such that a knowledgeable individual reviewing the evaluation can identify the technical issues considered during the evaluation and the basis for the determinations.” The three examples below describe safety evaluations done by the Contractor for changes made to the AB without prior DOE approval were not documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation can identify the technical issues considered during the safety evaluation and basis for the determination:

- Safety Evaluation No: 24590-WTP-SE-ENS-02-020 for deletion of inline radiation monitors shown on Process Flow Diagram HLW Vitrification Secondary Offgas Treatment (System HOP) did not provide a rationale that demonstrates the design “vi. Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.”
- Safety Evaluation No: 24590-WTP-SE-ENS-02-032 prepared to support revision of the PSAR, Table 3-10 Seismic Category of HLW SSC, to include all canister racks at HLW and to downgrade the present seismic category from SC-I to seismic categories appropriate to each of five canister rack systems, did not provide a rationale that demonstrated the design “vi. Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.”
- Safety Evaluation No: 24590-WTP-SE-ENS-02-041, prepared to support the deletion of the HLW Decontamination Effluent Collection Vessel (RLD-VSL-00001), as documented in ABCN 24590-WTP-ABCN-ENS-02-033, did not provide a rationale that demonstrated the design “vi. Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.”

Failure to fully implement the requirements of Section 3.3.3.1.a.2.iii of the ISMP is considered a Finding. (A-03-OSR-RPPWTP-007-F03)

4. Section 3.3.3.1.a.2.iv of the ISMP states, in part, DOE will be notified of revisions to the authorization basis and the notification must contain a summary of the safety evaluation and a brief description of the basis for concluding each of the requirements of Section 3.3.3.1.a.1 have been met.

ABCN Number 24590-WTP-ABCN-ENS-02-033, Revision 0, *Radioactive Liquid Waste Disposal (RLD) System AB Compliance*, approved December 13, 2002, Section III, Summary of Safety Evaluation, listed three safety evaluations and in "Remarks" stated, "All changes are within the intent of the AB. All changes are consistent with top level standards and do not result in non-conformance of the contract requirements." This ABCN did not contain a summary of the safety evaluation or a brief description of the basis for concluding that each of the requirements of Section 3.3.3.1.a.1 had been met.

Failure to fully implement the requirements of Section 3.3.3.1.a.2.iv of the ISMP is considered a Finding. (A-03-OSR-RRPWTP-007-F04)

The Contractor is requested to provide, within 30 days from the date this letter, a reply to the above Finding. The reply should include: (1) admission or denial of the Finding; (2) the reason for the Finding, if admitted, and if denied, the reason why; (3) the corrective steps that have been taken and the results achieved; (4) the corrective steps that will be taken to avoid such further Findings; and (5) the date when full compliance with the applicable commitments in your authorization bases will be achieved. Where good cause is shown, consideration will be given to extending the requested response time.

The Findings involved (1) failure to ensure that information related to Authorization Basis Change Notices (ABCN) and Safety Evaluations were readily available for ORP review; (2) failure to perform Safety Evaluations when required; (3) failure to ensure Safety Evaluations were documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation could identify the technical issues considered during the Safety Evaluation and basis for the determination; and (4) failure to ensure that ABCNs submitted to ORP include a summary of the Safety Evaluation.

The AFIs involved the following three subjects: (1) the inspectors' examination of Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, governing the AB consistency review process revealed that the guidance in the procedure for filling out the safety screening forms was not specific in several areas, resulting in Safety Checklists being filled out in a wide variety of different ways; (2) Procedure 24590-WTP-GPP-SREG-002, Revision 4, *Authorization Basis Maintenance*, contains confusing information regarding summarizing the results of the safety evaluation and Form 24490-SREG-F00004, *Authorization Basis Change Notice* provides direction that fails to address regulatory requirements to provide summary results; and (3) while the AB change training described in the Contractor's letter (Reference) was implemented in a timely manner, the effectiveness of this training was limited by its lack of consistency with regulatory commitments and the Contractor's implementing procedure. Effectively addressing the weaknesses described in these three follow-up items is particularly important because they were significant contributors to the identified Findings in this inspection.

If you have any questions, please contact me, or your staff may contact Walt Pasciak, WTP Safety Regulation Division, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

OSR:WJP

Enclosures (2)

cc w/encls:
W. R. Spezialetti, BNI

U.S. DEPARTMENT OF ENERGY
Office of River Protection

INSPECTION: Authorization Basis Management Assessment

REPORT NO: A-03-OSR-RPPWTP-007

FACILITY: Bechtel National, Inc.

LOCATION: 2435 Stevens Center
Richland, Washington 99352

DATES: January 6 through January 15, 2003

INSPECTORS: W. Pasciak, Sr. Regulatory Technical Advisor, Inspection Lead
G. Yuhas, Consultant
E. Messer-Wright, Consultant

APPROVED BY: P. Carier, Verification and Confirmation Official
WTP Safety Regulation Division

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EXECUTIVE SUMMARY
Authorization Basis (AB) Management Assessment Inspection
January 6 through January 15, 2003
Inspection Report Number A-03-OSR-RPPWTP-007

INTRODUCTION

The scope of this inspection of Bechtel National, Inc. (the Contractor) focused on verification of actions taken to ensure Revision 0 drawings and subsequent revisions are consistent with the authorization basis documents. These actions were described in November 14, 2002, letter from R. F. Naventi.¹ Specific areas reviewed included:

- Implementation of instruction to AB coordinators and checklists for performing AB consistency reviews (Section 1.2)
- Adequacy of Safety Evaluations (Section 1.3)
- Adequacy of compensatory actions to correct inconsistencies between the design drawings and the AB to prevent future inconsistencies (Section 1.4)
- Review of Root Cause Analysis and Management Assessment (Section 1.5)
- Review recently submitted ABCNs to the U.S. Department of Energy (DOE), Office of River Protection (ORP) (Section 1.6)
- Training of Staff for Performing AB Maintenance (Section 1.7)

SIGNIFICANT OBSERVATIONS AND CONCLUSIONS

- The inspectors found that documents were not readily available for ORP review. In several cases incomplete safety checklists were provided to the inspectors and in other cases Contractor staff were not aware if safety evaluations had been prepared and where they were located. Failure to fully implement the requirements of Section 3.3.3.1.a.2.ii, of the Integrated Safety Management Plan (ISMP) is a Finding. (A-03-OSR-RPPWTP-007-F01) (Section 1.2)
- The inspectors' examination of Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, governing the AB consistency review process revealed the procedure generally addressed the requirements of Section 3.3.3, "Changes to the Authorization Basis," of the ISMP, although the guidance in the procedure for filling out the safety screening forms was not specific in several areas. The procedure lacked specific guidance resulting in Safety Checklists being filled out in a wide variety of different ways. This is a Follow-up Item (A-03-OSR-RPPWTP-007-A01). (Section 1.2)

¹ BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Authorization Basis Consistency with the Evolving Design," CCN-024029, dated November 14, 2002.

- The Contractor made changes to the facility which were inconsistent with the AB and revisions to the AB were not made in accordance with Section 3.3.3.1 a of the ISMP. In the AB compliance review of the wet electrostatic precipitator (WESP) unit, no safety evaluation was performed. For the WESP unit, the gas flow had been changed from top to bottom to bottom to top. This Safety Checklist did not address the change in gas flow direction. Based on a search of the electronic database management system and discussion with design engineer, a safety evaluation had not been performed addressing the change in gas flow direction. Failure to perform a safety evaluation as required by Section 3.3.3.1.a of the ISMP is a Finding. (A-03-OSR-RPPWTP-007-F02) (Section 1.2)
- The Contractor incorrectly filled out several Safety Checklists for Pretreatment (PT) system documents not currently under the AB, as they did not indicate a need for a SE/Authorization Basis Change Notice (ABCN) even though identified physical facility changes were inconsistent with the PT facility Preliminary Safety Analysis Report (PSAR). Discussions with staff indicated the changes would not need SE/ABCNs because they were considered "editorial." Once the PSAR is approved SEs and the ABCNs will need to be processed for these changes. (Section 1.2)
- Three of seven safety evaluations reviewed did not contain sufficient rationale for the inspectors to conclude the Contractor could make the desired changes without DOE approval. This finding, taken with the lack of specificity in the procedures and training module, indicates the Contractor's program is not producing consistent results. This is a Finding (A-03-OSR-RPPWTP-007-F03). (Section 1.3)
- The Contractor had taken the actions described in its November 14, 2002, letter concerning review of its primary drawings. The Contractor's review found numerous drawings inconsistent with the AB. None of the changes required DOE approval or a Contractor decision to deviate. Inconsistencies between drawings and the AB are being resolved in a timely basis by submission of ABCNs. The Contractor has met its commitments to review 100% of the primary design drawings against the AB; however, further attention to improving the review process is warranted. (Section 1.4)
- The Contractor had completed a Management Assessment and Root Cause Analysis review as a result of commitments made in the November 14, 2002, letter to ORP. The conclusions and recommendations of these reviews generally were comprehensive, although some items were identified during the inspection which were not identified in the reviews. (Section 1.5)
- Contractor approved authorization basis changes did not always contain a summary of the safety evaluation as required by the ISMP. This is a Finding (A-03-OSR-RPPWTP-007-F04). (Section 1.6)
- The *Authorization Basis Maintenance* procedure contains confusing information regarding summarizing the results of the safety evaluation. Form 24490-SREG-F00004, *Authorization Basis Change Notice*, provides direction which fails to capture the requirement from RL/REG-97-13, *Office of River Protection Position on Contractor-*

Initiated Changes to the Authorization Basis, Section 3.5 paragraph 2. iv. to "...include a brief description of the basis for concluding that each requirement of Position 3.5.a.1 have been met." The difference between the procedure direction to include a summary of results compared to the requirement in RL/REG-97-13 may have contributed to the Finding described above. Inspectors' review found the direction confusing and a contributor to the identified inconsistencies. This is a Follow-up item. (Assessment Follow-up Item, A-03-OSR-RPPWTP-007-A02) (Section 1.6)

- The Contractor implemented the AB change training described in the Contractor's letter in a timely manner. The training had limited effectiveness due to a lack of consistency with regulatory commitments and the Contractor's implementing procedure. This is an Assessment Follow-up Item (A-03-OSR-RPPWTP-007-A03). (Section 1.7)

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AUTHORIZATION BASIS (AB) MANAGEMENT ASSESSMENT INSPECTION REPORT A-03-OSR-RPPWTP-007

1.0 REPORT DETAILS

1.1 Introduction

This inspection assessed the Contractor's performance related to maintenance of the AB; the adequacy of the integration of the AB maintenance process with the approval process for changes to the Waste Treatment Plant (WTP) facility design and with project programs and procedures; the safety evaluation process being conducted as specified in the Quality Assurance Manual (QAM); the adequacy of the AB process implementation to determine if reviews of design changes against the Preliminary Safety Analysis Report (PSAR) and against design requirements are being made, if AB coordinators have been assisting the design engineers in Authorization Basis Change Notice (ABCN) preparation, if a process has been set up for reviewing all primary design drawings against the AB, and if ABCNs or Authorization Basis Amendment Requests (ABAR) have been initiated or issued for all drawings that have been found to be inconsistent with the AB; the adequacy of the Contractor's root cause analysis for identifying corrective actions to ensure future review of engineering design changes against the AB are made; the adequacy of the Contractor's management assessment of AB/design consistency; and the adequacy of the AB maintenance training module and the training and experience of AB coordinators.

Details and conclusions regarding this inspection are described below.

1.2 Implementation of Instruction to AB Coordinators and Checklists for Performing AB Consistency Reviews (ITP I-107, IAP A-106)

1.2.1 Inspection Scope

In the November 14, 2002, letter¹ to DOE, the Contractor stated immediate compensatory action was taken by Engineering management to prevent additional design documentation to be issued without review against all information in the PSAR's descriptive information, as well as design requirements to support safety functions. An instruction was issued to all discipline managers which required the AB coordinators to perform and document an AB consistency review on all primary drawings prior to their issue as numeric revisions. The required reviews were performed using the checklist in guide 24590-WTP-GPG-SREG-009-0, *Safety Screening and Safety Evaluation*. This was a new procedure and included a Safety Checklist for Design and mandated the use of the checklist for screening design changes for AB compliance and consistency.

The inspectors examined the immediate compensatory actions taken by engineering management to prevent future design documentation to be issued without review against AB information. An internal memo was issued on October 16, 2002 (CCN: 44654) to all discipline managers which

¹ BNI letter from R. F. Naventi to R. J. Schepens, "Authorization Basis Consistency with the Evolving Design," CCN-045029, dated November 14, 2002.

required the AB coordinators to perform and document AB consistency reviews on all primary drawings prior to their issue as numeric revisions. The inspectors reviewed records of these consistency reviews and discussed the reviews with the Contractor's staff involved in performing them. The inspectors examined Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, and reviewed records and interviewed staff to determine if the checklist was being adequately implemented. The checklist for performing AB consistency reviews, 24590-WTP-GPP-ENG-030, Rev. 0, "Safety Screen for Design Changes" was cancelled and superseded by Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*.

In the November 14, 2002, letter to DOE, the Contractor stated: "100% of primary design drawings that have been issued to date as Revision 0 or higher are being reviewed against both the approved and proposed AB by teams consisting of cognizant Environmental and Nuclear Safety (E&NS) Safety Analysts and Design Engineers. This review, initiated on October 21, 2002, are being documented using the Safety Screen for Design Changes forms.This review is scheduled to be completed by November 22, 2002." The review involved over 300 primary drawings and determined over 100 changes were needed to the AB to achieve consistency with the design drawings. Primary drawings include piping and instrumentation drawings, process flow diagrams, ventilation and instrumentation diagrams, mechanical handling flow diagrams, electrical single-line diagrams, and facility layout drawings. According to Contractor staff, these drawings and diagrams encompassed the complete set of drawings and diagrams presented in the AB documents. As part of this inspection, the inspectors did not determine if primary drawings actually encompassed the complete set of drawings and diagrams presented in AB documents.

1.2.2 Observations and Assessments

Contract No. DE-AC27-01RV14136² states in Standard 7 Section (e) (2) (iii) the Contractor's Integrated Safety Management Plan (ISMP) shall conform with RL/REG-97-13, *Office of River Protection Position on Contractor-Initiated Changes to the Authorization Basis*. 24590-WTP-ISMP-ESH-01-001, Rev 2b, *Integrated Safety Management Plan*, dated December 19, 2002 implements this commitment in Section 3.3.3, "Changes to the Authorization Basis." ISMP 24590-WTP-ISMP-ESH-01-001, Revision 2b, Section 3.3.3.1 a, states the Contractor may make revisions to the AB associated with changes to the facility without prior approval of DOE provided certain documentation requirements are met. Section 3.3.3.1.a.2.ii, states: "Documentation will be retained and readily available for DOE review." During the inspection, it was determined documents were not readily available for DOE review. In several cases incomplete safety checklists were provided to the inspectors and in other cases Contractor staff were not aware if safety evaluations had been prepared and where they were located. Failure to fully implement the requirements of Section 3.3.3.1.a.2.ii, of the ISMP is considered a Finding (A-03-OSR-RPPWTP-007-F01). Below are two specific examples:

- Design Document No. 24590-LAW-M8-C5V-00005, Revision 1 – Changes were made to the LAW Vitrification Building V&IDs associated with C3 to C5 inbled drawings on November 15, 2002, and no Safety Checklist for Design was readily available from the

² Contract No. DE-AC27-01RV14136 between the U.S. Department of Energy and Bechtel National, Inc., dated December 11, 2002.

electronic database management system for DOE review.

- Design Document No. 24590-PTF-M6-PWD-00057, Revision 1 – Changes were made to P&IDs for the PTF Plant Wash & Disposal Underground Transfer Lines on November 21, 2002, and no Safety Checklist for Design was readily available from the electronic database management system for DOE review.

Contract No. DE-AC27-01RV14136 states in Standard 7 Section (e) (2), (iii) the Contractor's ISMP shall conform with RL/REG-97-13. 24590-WTP-ISMP-ESH-01-001, Rev 2b, *Integrated Safety Management Plan*, dated December 19, 2002, implements this commitment in Section 3.3.3, "Changes to the Authorization Basis." ISMP 24590-WTP-ISMP-ESH-01-001, Revision 2b, Section 3.3.3.1.a, states the Contractor may make revisions to the authorization basis associated with changes to the facility without prior approval of DOE provided a safety evaluation is performed. The following is an example where changes were made to the facility which were inconsistent with the AB and revisions to the AB were not made in accordance with Section 3.3.3.1.a of the ISMP. Specifically, for the review of the wet electrostatic precipitator (WESP) unit associated with Design Document No. 24590-HLW-M6-HOP-00002, no safety evaluation was performed. For the WESP unit described in this document, the gas flow has been changed from top to bottom to bottom to top. Section E, Line 14 of Contractor approved ABCN 24590-WTP-ABCN-ENS-02-023 referenced Safety Evaluation No. 24590-WTP-SE-ENS-02-020 as the safety evaluation for changes made to Design Document No. 24590-HLW-M6-HOP-00002. This safety evaluation did not address the change in gas flow direction. Based on a search of the electronic database management system and discussion with design engineer, a safety evaluation was not performed addressing the change in gas flow direction. The design engineer stated the change was suggested by a vendor as a way to improve WESP efficiency. Failure to perform a safety evaluation as required by Section 3.3.3.1.a, of the ISMP is considered a Finding. (A-03-OSR-RPPWTP-007-F02)

The inspectors examined Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, governing the AB consistency review process. The inspectors determined the procedure generally addressed the requirements of Section 3.3.3, "Changes to the Authorization Basis," of the ISMP, although the guidance in the procedure for filling out the safety screening forms was not specific in several areas. In the November 14, 2002, letter to DOE, the Contractor stated Procedure 24590-WTP-GPP-SREG-009 was put in place as a corrective action. The procedure was found to lack specific guidance resulting in Safety Checklists being filled out in a wide variety of different ways. The following are examples of different ways Safety Checklists were filled out and examples of a lack of specific guidance in the procedure. This is considered a Follow-up Item (A-03-OSR-RPPWTP-007-A01):

- Some engineers were of the opinion it was their responsibility to fill out the ABCN and Safety Evaluation (SE) blocks, while others thought it was the responsibility of Environmental & Nuclear Safety (E&NS) staff. All E&NS staff interviewed believed it was the responsibility of the engineers to fill out the block. In some cases ABCNs were generated where the ABCN block was blank. The procedure did not give clear guidance in this area.

- The resolution of "yes" answers on completed Safety Checklists were inconsistent, often brief and cryptic, and in many cases, the resolution could not be understood without discussing the Safety Checklist with someone involved in its preparation. The space on the form for providing this information was small, which may have led to the brief descriptions. In other cases, the checklists were not fully completed. This issue was identified in the two management assessments discussed in Section 1.5 of this report. Three examples follow:
 1. Design Document No. 24590-HLW-M6-HOP-00006 - A "yes" was indicated on the Safety Checklist for general review question #2. (General review question #2 addresses changes to design media that are other than just additional detail from what is in the PSAR.) For a vessel described on this document, Contractor staff stated the PSAR indicates the vessel will be connected to the vessel vent purge system. The subject document does not include connection to the vessel vent system. Contractor staff explained hydrogen gas generation does not occur in the vessel, so connection to the purge system is not necessary. The resolution of the "yes" answer was not described adequately on the Safety Checklist because it did not indicate the vessel was removed from the vessel vent system because hydrogen gas was not generated in it.
 2. Design Document No. 24590-HLW-M6-HOP-00002 - A "yes" was indicated on the form for general review question #2. For the WESP unit described in this document, according to Contractor staff, the PSAR indicates gas flow is from top to bottom. The subject document indicates the flow from bottom to top. The resolution of the "yes" answer was not described adequately on the Safety Checklist because it did not indicate the basis for determining flow from bottom to top provides adequate safety and did not indicate the reason the change was being made.
 3. Safety Checklist for Design 24590-PTF-M5-VT17T-00006, Rev.1 signed on December 19, 2002 was incomplete; Block 43 which asks: "Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?" was not answered. The change involved deletion of the emptying ejectors, relocation of pumps, and addition of a remote sampling point to the Process Flow Diagram 24590 PTF-M5-VT17T-00006 for the Treated LAW Condensate Storage system (TCP). The checklist concluded: "Changes to the drawing from Revision 0 are editorial in nature which are deemed can wait to be captured at the next PSAR update." This is an example of a checklist which was not fully completed.
- The procedure did not make clear what encompassed "editorial" changes that do not need ABCNs. Some engineers and E&NS personnel interpreted this to include facility descriptions in the PSAR which were in error. This interpretation is incorrect. In the three examples in the above bullet, no ABCN was indicated on the form because the originators incorrectly concluded the changes were "editorial." Incorrect information in the training module contributed to this confusion as to what constituted "editorial"

changes. The training module incorrectly described minor physical facility changes as "editorial." This is discussed in Section 1.7 of this report.

- Concurrence for the Safety Checklists was not performed consistently. The procedure did not require E&NS staff to sign the Safety Checklists, although most had been signed by E&NS staff and several Contractor staff indicated E&NS signature was required. In another example, Safety Checklist for Design 24590-PTF-M5-VT17T-00006, Rev.1 signed on December 19, 2002 was not reviewed by the "Discipline AB Reviewer" called out in the checklist but was reviewed by the E&NS representative.
- Safety Checklists were performed on many pretreatment documents which were not yet in the AB (e.g., pretreatment process documents). Several engineers were interviewed who originated Safety Checklists for the pretreatment process and these engineers did not know these documents were not yet in the AB. Many of the Safety Checklists failed to indicate the need to perform SEs and ABCNs. The SEs and ABCN would only be needed after the PT construction authorization is approved.

Several Safety Checklists for PT system documents not currently under the AB were found to be incorrectly filled out as they did not indicate a need for a SE/ABCN even though physical facility changes were inconsistent with the PT facility PSAR. Discussions with staff indicated the changes would not need SE/ABCNs because they were deemed to be "editorial." Once the PSAR is approved SEs and the ABCNs will need to be processed for these changes. The following examples are provided as additional evidence the term "editorial" changes is not well understood by individuals filling out Safety Checklists:

- Design Document No. 24590-PTF-M5-V17T-00012 and 24590-PTF-M5-V17T-00015. This example changed the following: Density measurement was added to the Rev 0 drawing that was not in the Rev C drawing; cooling jackets on CXP IX columns were removed; the PSAR described automatic water addition to columns. The Safety Checklist stated the PSAR will need to be updated, yet no request for a SE/ABCN was made. Contractor staff stated these changes were considered editorial.
- Design Document No. 24590-PTF-M5-V17T-00018 and 24590-PTF-M5-V17T-00019. This example changed the following: The resin addition fines receipt tank has been removed and the PSAR failed to include NaOH as a preconditioner for resins. The Safety Checklist stated the PSAR will need to be updated, yet no request for a SE/ABCN was made. Contractor staff stated these changes were considered editorial.
- Design Document No. 24590-PTF-M5-V17T-00021001. This example changed the following: Isolation valves and radiation monitors located between the primary and secondary HEPA filters were removed. The vessel vent heater, PVV-HTR-00001C, was added. An Actuator was added for the scrubber gas bypass valve. No request for a SE/ABCN was made. Contractor staff stated these changes were considered editorial.
- Design Document No. 24590-PTF-M5-V17T-00021002. This example changed the following: PJV condensate collection vessel was deleted; four PJV HEMEs changed to

three PJV demisters; radiation detectors were removed. Isolation valves and radiation monitors located between the primary and secondary HEPA filters were removed. The vessel vent heater, PVV-HTR-00001C, was added. An Actuator was added for the scrubber gas bypass valve. No request for a SE/ABCN was made. Contractor staff stated these changes were considered editorial.

- Design Document No. 24590-PTF-M5-V17T-00021003. This example changed the following: two vessels were deleted and one vessel was added. The Safety Checklist states the PSAR will need to be updated, yet no request for a SE/ABCN was made. Contractor staff stated these changes were considered editorial.
- Design Document No. 24590-PTF-M5-V17T-00021004. This example changed the following: Vessel, PVP-VSL-00003 was deleted; vessel, RDP-VSL-00002C was added; vent exhaust from tank SHR-TK-00009 was removed from the PVP system; and vent exhaust from the resin-dewatering container in RDP system was added to the combined exhausts for the PVP system. The Safety Checklist stated the PSAR will need to be updated, yet no request for a SE/ABCN was made. Contractor staff stated these changes were considered "editorial."

These examples represent inadequate knowledge of Contractor staff in understanding what changes are to be considered "editorial" and what changes are to be considered physical facility changes.

In the November 14, 2002, letter to DOE, the Contractor stated identified inconsistencies requiring a Contractor-approved AB change, the ABCNs will be approved by December 19, 2002. While ABCNs for many changes falling in this category were approved by December 19, 2002, many were not approved by the committed date, but were approved shortly thereafter. Following are some that were not approved by that date: 24590-WTP-ABCN-ENS-02-050; 24590-WTP-ABCN-ENS-02-04850; 24590-WTP-ABCN-ENS-02-047; 24590-WTP-ABCN-ENS-02-016.

1.2.3 Conclusions

This inspectors determined documents were not always readily available for DOE review. In several cases incomplete safety checklists were provided to the inspectors and in other cases Contractor staff were not aware if SEs had been prepared and where they were located. Section 3.3.3 of the ISMP requires these documents be readily available for DOE review. This was determined to be an inspection Finding.

An example was identified where changes were made to a drawing which were inconsistent with the AB and revisions to the AB were not made in accordance with Section 3.3.3 of the ISMP. Specifically, no SE was performed associated with the reviews of Design Document No. 24590-HLW-M6-HOP-00002. Physical changes to the facility were made on this document that were inconsistent with the AB. This was determined to be an inspection Finding.

Procedure 24590-WTP-GPP-SREG-009 was put in place as a corrective action. The procedure was found to lack specific guidance resulting in it being filled out in a wide variety of different ways. This potentially contributed to at least one finding identified in this report.

Several Safety Checklists for PT system documents not currently under the AB, were found incorrectly filled out as they did not indicate a need for a SE/ABCN even though they were inconsistent with the PT facility PSAR. Discussions with staff indicated the changes would not need a SE/ABCN because they were editorial. These examples represent inadequate knowledge of Contractor staff in understanding what changes are to be considered editorial and what changes are to be considered physical facility changes.

1.3 Adequacy of Safety Evaluations (ITP I-107)

1.3.1 Inspection Scope

The inspectors examined seven safety evaluations for drawing changes affecting the AB for the purpose of determining if the safety evaluations followed the guidance of RL/REG 97-13, Revision 9 and the ISMP. The inspectors also interviewed several staff members involved in the preparation of the SEs and reviewed associated ABCNs approved by the Contractor.

1.3.2 Observations and Assessments

Contract No. DE-AC27-01RV14136 states in Standard 7 Section (e) (2) (iii) the Contractor's ISMP shall conform with RL/REG-97-13. 24590-WTP-ISMP-ESH-01-001, Rev 2b, *Integrated Safety Management Plan*, dated December 19, 2002, implements this commitment in Section 3.3.3 Changes to the Authorization Basis. ISMP 24590-WTP-ISMP-ESH-01-001, Revision 2b, Section 3.3.3.1 a. 1. states in part: "The format, content, and level of detail associated with an acceptable "safety evaluation" is highly dependent on the nature of the revision to the authorization basis, but in all cases, the safety evaluation must provide the rationale that demonstrates 1.i. through 1. viii. are met." Items 1.i. through 1. viii. are the criteria permitting the Contractor to make changes without prior DOE approval of the change.

Section 3.3.3.1.a.2.iii of the ISMP states: "Safety evaluations should be documented in sufficient detail such that a knowledgeable individual reviewing the evaluation can identify the technical issues considered during the evaluation and the basis for the determinations." The three examples below describe safety evaluations done by the Contractor for changes made to the AB without prior DOE approval which were not documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation can identify the technical issues considered during the safety evaluation and basis for the determination. Failure to fully implement the requirements of ISMP Section 3.3.3.1.a.2.iii is considered a Finding (A-03-OSR-RPPWTP-007-F03).

- Safety Evaluation No. 24590-WTP-SE-ENS-02-020 for deletion of inline radiation monitors shown on Process Flow Diagram HLW Vitrification Secondary Offgas Treatment (System HOP) did not provide a rationale demonstrating the design "vi." Will

continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety."

The safety evaluation stated on line 27, "Inline Radiation Monitors are removed downstream of the HEPAs as they cannot detect small changes. The offgas is pulled through a filter that is monitored for radiation changes." This safety evaluation was referenced in Section III, Summary of Safety Evaluation, on ABCN Number 24590-WTP-ABCN-ENS-02-023, "Update of HLW PSAR," approved December 19, 2002 without additional remarks or rationale.

Section 2.5.3.1.6, HEPA Preheaters and Filters, of 24590-WTP-PSAR-ESH-01-002-04, Revision 0, PSAR to Support Construction Authorization; HLW Facility Specific Information, Approved September 17, 2002 states in part, "HEPA unit instrumentation, alarms, controls, and interlocks will indicate the following conditions: ... (fourth bullet) High radiation in the outlet stream, (fifth bullet) High radiation on the filters." Section E. 23 of the ABCN deleted the fourth and fifth bullets from Section 2.5.3.1.6 of the HLW PSAR. The Contractor's rationale for deleting the inline radiation monitors (they cannot detect small changes when the PSAR states they are intended to indicate high radiation in the outlet stream) was not explained in the SE. The rationale also stated the filter was monitored for radiation changes, yet the ABCN deleted the high radiation monitor on the filter.

Section F. Line 23 of the ABCN stated: "No radiation monitors are included in the HOP system per 24590-HLW-DCN-PR-02-012. The DCN's "Justification for Change" stated in item 6, "The radiation detectors are being removed since even during extreme upset conditions, radiation levels from the offgas are not expected to be above background." This appears inconsistent with source terms described in Section 3.4.1.8 of the PSAR.

Removal of the radiation monitors may also be inconsistent with Safety Requirements Document (SRD) Volume II, Safety Criterion 4.2-4 and Safety Criterion 5.3-4. Safety Criterion 4.2-4 requires gaseous storage systems designated as important-to-safety (ITS) to have continuous monitoring to detect the loss or degradation of their safe storage function. Safety Criterion 5.3-4 requires equipment be designed and installed to monitor and maintain control over radioactive materials in gaseous effluents produced during operations, including operational occurrences.

The safety evaluation rationale concluding the inline radiation monitors could be removed did not provide sufficient detail to identify the technical issues considered during the SE.

- Safety Evaluation No. 24590-WTP-SE-ENS-02-032 prepared to support revision of the PSAR, Table 3-10 Seismic Category of HLW SSC, to include all canister racks at HLW and to downgrade the present seismic category from SC-I to seismic categories appropriate to each of five canister rack systems, did not provide a rationale demonstrating the design. Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.

The safety evaluation stated: "The design evolution has resulted in downgrade of the HPH, HDG, & HRH racks from SDC ITS. Since this change in classification is consistent with classifications of other HLW ITS and non-ITS SSCs this change does not result in any new DBE. The HEH racks remain ITS SDC, SC-I." This safety evaluation was referenced in Section III, Summary of Safety Evaluation, of ABCN Number 24590-WTP-ABCN-ENS-02-014, "HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications," approved December 19, 2002, without additional remarks or rationale.

Table 3-10 Seismic Category of HLW SSCs, of 24590-WTP-PSAR-ESH-01-002-04, Revision 0, Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information, approved September 17, 2002, for "Canister Racks" stated, the racks hold about 40 canisters and are SC-1. The ABCN described the change in Section E. as "Chapter 3, Table 3-10, the table does not detail all the canister racks in the high level facility. The table should therefore read: HRH Canister Rack (16 canisters) SCIV, HPH Canister Cooling Rack (24 canisters) SCIII, HPH Canister Buffer Rack (24 canisters) SCIII, HDH Canister Rack (1 canister) SCIII, and HEH Canister Storage Rack (46 canisters) SCI."

In Section F of the ABCN, the contractor explained why the change was needed as, "The PSAR identifies all HLW canister racks as seismic category I (SC-I). However, the System HPH Canister Cooling Rack, System HPH Canister Buffer Rack, and System HDH Canister Rack are contained within C5 areas. Because this places these three racks inside of seismically qualified C5 boundaries they can be classified as seismic category III (SC-3)."

No mention was made in the safety evaluation to indicate if the downgrade involved review of the C5 seismic calculations to verify the load resulting from these canister racks on the C5 boundary during the design base earthquake had been considered. Also, downgrade of the canister rack seismic classification may be inconsistent with Safety Requirements Document Volume II (SRD) Safety Criterion 4.1-3 which requires the C5 boundary to withstand the design base earthquake due to expected loads.

The safety evaluation rationale concluding canister racks could be downgraded from SC-I because they were located in a C5 area did not provide sufficient detail to identify the technical issues considered during the safety evaluation.

- Safety Evaluation No. 24590-WTP-SE-ENS-02-041, prepared to support the deletion of the HLW Decontamination Effluent Collection Vessel (RLD-VSL-00001), as documented in ABCN 24590-WTP-ABCN-ENS-02-033, did not provide a rationale that demonstrated the design "vi." Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety."

In the current design, the effluent from the Canister Decontamination Handling System (HDH) is transferred from the Waste Neutralization Vessel (HDH-VSL-00003) to the Decontamination Effluent Collection Vessel. The HLW PSAR, Section 2.5.5.1 stated, "RLD-VSL-00001 effluent will be sampled, analyzed, and neutralized with 5M sodium

hydroxide before transfer to the PT. The PT facility will receive the effluents in vessel PWD-VSL-00043 (section 2.4.11.1.4)." Safety Evaluation 24590-WTP-SE-ENS-02-041 provided the following justification for deleting the Decontamination Effluent Collection Vessel, the "Decon Effluent Collection Vessel, (RLD-VSL-00001), has been deleted. The Waste Neutralization Vessel, (HDH-VSL-00003) can be transferred directly to Pre-treatment without first going to RLD-VSL-00001. This eliminates the need for RLD-VSL-00001. Reference: 24590-HLW-DCA-PR-02-010, Rev. 0." Neither Safety Evaluation 24590-WTP-SE-ENS-02-041 nor Design Change Application 24590-HLW-DCA-PR-02-010 discussed if sampling, analyzing, and neutralizing the effluent in the vessel before transfer to the PT facility was still required; and if it was still required, if this function would be performed in the Waste Neutralization Vessel prior to transfer to the Pre-treatment facility. Both the Waste Neutralization Vessel and the Decontamination Effluent Collection Vessel are listed as ITS, Safety Design Significant (SDS) structures, systems, and components (SSCs).

The safety evaluation rationale prepared to support the deletion of the HLW Decontamination Effluent Collection Vessel did not provide sufficient detail to identify the technical issues considered during the SE.

When the Decontamination Effluent Collection Vessel was deleted from HLW as described in 24590-HLW-DCA-PR-02-010, the effluent transferred directly to the PT facility without sampling, analyzing, or neutralizing the contents prior to transfer. About the same time this change was being made, PT facility designers changed the material used for the HLW Effluent Transfer Vessel from Molybdenum 6 to stainless steel. Although stainless steel vessels are corrosive-resistant, the vessels would be expected to be etched by the effluent containing ceric (Ce^{4+}) nitrate if the effluent was not neutralized prior to transfer. The HLW design was then changed to allow sampling, analysis, and neutralization of each batch of the Waste Neutralization Vessel prior to transfer to the PT facility, (reference: Design Change Applications 24590-HLW-DCA-PR-02-013, Rev. 0; 24590-HLW-DCA-PR-02-017, Rev. 0; 24590-HLW-DCA-PR-02-010, Rev. 1; and Meeting Minutes CCN: 042017). The ABCN 24590-WTP-ABCN-ENS-02-033 and associated safety evaluations did not provide documentation describing these design changes and implications. Lack of communication between the HLW and PT design organizations contributed to this deficiency.

Inspectors noted that Safety Evaluations (24590-WTP-SE-ENS-02-041, 24590-WTP-SE-ENS-02-042, and 24590-WTP-SE-ENS-02-043) associated with ABCN 24590-WTP-ABCN-ENS-02-033 failed to identify required changes to the PT facility PSAR. Deletion of the Decon Effluent Collection Vessel in HLW required deletion of the bullet describing material received from the HLW canister decontamination effluent from HLW vitrification decontamination effluent collection vessel (RLD-VSL-00001) in Pretreatment PSAR, Section 2.5.15.3, "HLW Effluent Transfer Vessel (PWD-VSL-00043)." At the time of inspection, the PT PSAR was not in the AB; hence, this is not considered a Finding.

1.3.3 Conclusions

Three of seven safety evaluations did not contain sufficient rationale for the inspectors to conclude the Contractor could make the desired changes without DOE approval. This Finding, taken with the lack of specificity regarding the performance of safety evaluations in the procedure (Section 1.2) and in the training module (Section 1.7) indicates further attention to performing safety evaluations is warranted.

1.4 Adequacy of compensatory actions to correct inconsistencies between the design drawings and the AB to prevent future inconsistencies (IAP A-106)

1.4.1 Inspection Scope

In the November 14, 2002, letter to DOE, the Contractor stated that 100% of primary design drawings issued as Revision 0 or higher, were being reviewed against both the approved and proposed AB by teams consisting of cognizant E&NS Safety Analysts and Design Engineers. These reviews were initiated by the Engineering Manager in an internal memorandum dated October 26, 2002, CCN: 044654. The reviews were to be documented using the Safety Screen for Design Changes forms. This review was to be completed by November 22, 2002. The contractor also stated that for identified inconsistencies that require a Contractor approved AB change, the ABCNs will be approved by December 19, 2002, and for identified inconsistencies that require a DOE approved AB change, the AB Changes will be approved by DOE by December 19, 2002, or DTDs will be issued by December 19, 2002.

The inspectors reviewed actions taken by the Contractor to screen the primary design drawings against the AB and to initiate ABCNs or ABARs for those drawings that had been identified as being inconsistent with the AB.

Open Item IR-99-007-01-FIN resulted from a failure to implement a process to ensure the authorization basis is maintained current with the facility design. This finding was developed in DOE Inspection No. IR-99-007. Subsequent to the inspection in 1999, inspections were conducted in 2000 (IR-00-004) and in 2001 (IR-01-001) where the actions addressing the finding were reviewed. In the follow-up inspections it was determined that the corrective actions were complete but verification of their effectiveness still remained. This inspection reviewed the effectiveness of the corrective actions described in the November 14, 2002, letter as applicable to the open item.

1.4.2 Observations and Assessments

Based on review of a Contractor Memorandum dated December 16, 2002, CCN: 04976, the Technical Baseline Manager informed the Acting Engineering Manager the AB consistency review was complete. The review addressed all primary drawings using the 24590-WTP-GPG-ENG-30, Revision 0, Safety Screen for Design Changes and 24590-WTP-GPP-SREG-009_0, Safety Screening and Safety Evaluation, when it replaced 24590-WTP-GPG-ENG-30 on November 4, 2002. The Memorandum summarized the results as follows: 188 drawings did not

require ABCNs, 109 drawings involved design changes covered by 15 ABCNs, 21 of the changes required a safety evaluation to assess the safety impact for an ABCN, and none of the changes required an ABAR.

The inspectors scanned about 200 of the completed Safety Checklist for Design prepared for the identified changes. From this set, several checklists and drawings were selected for detail review. The results of this review are documented in Section 1.2.2 of the report. Seven safety evaluations were reviewed. The results of the review are documented in Section 1.3.2 of this report.

According to the Contractor's AB Coordinator, as of January 14, 2003, no ABARs or DTDs resulted from the drawing reviews. The inspectors did not identify a need for an ABAR or DTD during the inspection. Twelve ABCNs for Contractor approved changes were completed and three cancelled. Of this set, four were selected for detailed review. The results of the review are documented in Sections 1.2, 1.3 and 1.6 of this report. Ten ABCNs had not been transmitted to DOE as of January 14, 2003. At the time of the inspection, the Contractor's AB Coordinator stated these are awaiting final signature for transmittal to DOE and should be mailed in a few days; while this is not consistent with the November 14, 2002 letter, it is consistent with the goal to bring the drawings and PSAR into agreement.

The inspectors selected six drawings from a set of about 740 issued between November 14, 2002 and January 6, 2003. The six were selected because they involved initial issuance or revision of drawings important to safety. The object of the review was to determine if the Safety Checklists for Design were readily available from the electronic database management system and if they had been completed in accordance with the procedures. The results are discussed in Section 1.2.2 of this report. Independent of this observation, the Contractor's Quality Assurance conducted a similar audit of Pre-Treatment Facility records on January 10, 2003.

On January 13, 2003, the Contractor's Quality organization initiated Corrective Action Report (CAR) Number 24590-WTP-CAR-QA-03-003 to indicate they had independently determined PT facility Safety Checklists for Design were not being entered in the "IDOC" electronic database management system as of January 10, 2003, because Design Input Memorandum (DIM) did not identify 2459-WTP-GPP-SREG-00009. Project Document Control was notified on January 11, 2003 to revise the DIM checklist to include the new procedure according to the CAR.

Inspection No. IR-97-007-01, conducted in 1997, focused on the failure to implement a process to ensure the AB is maintained current with the facility design. This inspection found the process described by Revision 4 to 24590-WTP-GPP-SREG-002, *Authorization Basis Maintenance* effective December 17, 2002 and 24590-WTP-GPP-SREG-009_0, *Safety Screening and Safety Evaluations*, effective November 4, 2002 was being implemented. A Corrective Action Report (CAR) was prepared on January 13, 2003 to facilitate correction of the Design Input Memorandum to reference 24590-WTP-SREG-009 added efficacy of the process. This open item is closed. The findings documented in this report represent opportunities to improve the process and will be tracked separately.

1.4.3 Conclusions

The Contractor has taken the actions described in its November 14, 2002, letter concerning review of its primary drawings. The review found numerous drawings inconsistent with the AB. None of the changes required DOE approval or a Contractor DTD. Inconsistencies between drawings and the AB are being resolved in a timely basis by submission of ABCNs. The Contractor has met its commitments to review 100% of the primary design drawings against the AB; however, as indicated in other sections of this report, further attention to improving the review process is warranted.

1.5 Review of Root Cause Analysis and Management Assessment (ITP I-107, IAP A-106)

1.5.1 Inspection Scope

In the November 14, 2002, letter to DOE, the Contractor stated that a Root Cause Analysis, with a senior engineer as the lead, is being performed to identify corrective actions to ensure that future design changes are performed in a manner consistent with requirements. The Root Cause Analysis was scheduled for completion by December 23, 2002. Also, in the November 14, 2002, letter, the Contractor stated that a second Management Assessment of AB/design consistency was scheduled for completion by December 19, 2002. This second Management Assessment would verify that inconsistencies have been adequately identified and resolved. The inspectors examined the Contractor's Root Cause Analysis and Management Assessment.

1.5.2 Observations and Assessments

In the November 14, 2002, letter to DOE, the Contractor committed to complete the Root Cause Analysis by December 23, 2002. The Root Cause Analysis was issued January 7, 2003. The Root Cause Analysis identified Procedure 24590-WTP-GPP-SREG-009, *Safety Screening and Safety Evaluations*, governing the AB consistency review process, has details omitted and the training is not complete or sufficiently detailed. The inspectors agree with the Root Cause Analysis that the procedure has details omitted as described in Section 1.2 of this report. The inspectors also agree the training was not complete or sufficiently detailed. The Root Cause Analysis failed to identify factual errors in training as described in Section 1.7 of this report.

In the November 14, 2002, letter to DOE, the Contractor stated that a Management Assessment of AB/design consistency was scheduled to be performed by December 19, 2002, as one of the corrective actions. A management assessment had already been completed on November 4, 2002. The second management assessment had been completed on December 19, 2002. Review of the two Management Assessments indicated that they did identify some of the same problems identified during the inspection such as "yes" blocks on the safety checklists that were not always explained and a wide variety of detail provided in the explanation of the identified discrepancies. An important observation during the inspection was that there were weaknesses in the procedure. The Management Assessment did not indicate this. The Management Assessment identified other important items requiring consideration such as safety screens not

performed on Specifications. The Management Assessment concluded the technical adequacy of the safety screens was high, with only a few minor exceptions. While the inspectors observed the technical adequacy of the completed Safety Checklists were high in many cases, there were also many cases where the resolution of "yes" answers, which represented the SEs, was inadequate. While these issues were identified in the first Management Assessment well before the inspection, the safety screens were not corrected at the time of the inspection.

1.5.3 Conclusions

The inspectors concluded that the Management Assessment and Root Cause Analysis performed as a result of commitments made in the November 14, 2002, letter to ORP were accurate and generally comprehensive, although some items were identified during the inspection which were not identified in those documents.

1.6 Review of recent ABCNs submitted to ORP (ITP I-107, IAP A-106)

1.6.1 Inspection Scope

ABCNs 24590-WTP-ENS-02-021, 24590-WTP-ENS-02-033, and 24590-WTP-ENS-02-043, submitted to the ORP by letter dated December 27, 2002³. The summary safety evaluations were reviewed by the inspectors.

1.6.2 Observations and Assessments

In the December 27, 2002, letter from the Contractor to DOE, the Contractor transmitted three ABCNs. For ABCN 24590-WTP-ABCN-ENS-02-021 and ABCN 24590-WTP-ABCN-ENS-02-043, the Contractor did not provide a summary safety evaluation but provided the entire safety evaluation instead. This is an acceptable approach and is appropriate where the safety evaluation is very brief. For ABCN 24590-WTP-ABCN-ENS-02-033, the Contractor did not provide a summary safety evaluation but only provided the relevant safety evaluation references. This is not an acceptable approach and is inconsistent with the requirements of RL/REG-97-13.

Contract No. DE-AC27-01RV14136 states in Standard 7 Section (e) (2) (iii) the Contractor's ISMP shall conform with RL/REG-97-13. 24590-WTP-ISMP-ESH-01-001, Rev 2b, *Integrated Safety Management Plan*, dated December 19, 2002 implements this commitment in Section 3.3.3, "Changes to the Authorization Basis." ISMP Section 3.3.3.1 a.2.iv states DOE will be notified of Contractor changes and the notification must contain "a summary of the safety evaluation." ABCN Number 24590-WTP-ABCN-ENS-02-033, Revision 0, *Radioactive Liquid Waste Disposal (RLD) System AB Compliance*, Approved December 13, 2002, Section III. Summary of Safety Evaluation listed three safety evaluations and in "Remarks" stated, "All

³ BNI letter from R. F. Naventi to R. Schepens, ORP, "Transmittal for Information – Authorization Basis Change Notices 24590-WTP-ENS-02-021, Revision 0, 24590-WTP-ENS-02-033, Revision 0, and 24590-WTP-ENS-02-043, Revision 0, and the Integrated Safety Management Plan, Revision 2b," Dated December 19, 2002, CCN: 048813.

changes are within the intent of the AB. All changes are consistent with top level standards and do not result in non-conformance of the contract requirements." This ABCN did not contain a summary of the safety evaluation. Failure to implement the requirements of Section 3.3.3.1.a.2.iv of the ISMP by not including a summary of the safety evaluation in the notification is an inspection Finding. (A-03-OSR-RRPWTP-007-FO4)

Procedure 24590-WTP-GPP-SREG-002, Revision 4, *Authorization Basis Maintenance*, effective December 17, 2002, Section 3.4, "ABCN Preparation Process," Step 8 contained the direction to "...summarize the results of the SE..." The text is confusing and, according to the author, incorrect. Form 24490-SREG-F00004, Revision 4 "Authorization Basis Change Notice" effective December 17, 2002, contained the following direction in Section III, Summary of Safety Evaluation: "Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes or Facility Changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information." The direction failed to capture the requirement from RL/REG-97-13 Section 3.5 paragraph 2. iv. to "...include a brief description of the basis for concluding that each requirement of Position 3.5.a.1 have been met." The difference between the procedure direction to include a summary of results compared to the requirement in RL/REG-97-13 may have contributed to the Finding described above. The failure to include a summary of the safety evaluation in the ABCN was discussed with the individual responsible for preparation of Procedure 24590-WTP-GPP-SREG-002, Revision 4, *Authorization Basis Maintenance*, Effective December 17, 2002. According to the Contractor's representative, Section 3.4, ABCN Preparation Process, Step 8 was intended to implement the ISMP requirement to include the summary of the safety evaluation in the ABCN. Inspector review of Step 8 found the direction confusing and not likely to consistently result in the desired objective. The Contractor's representative stated that the text of Step 8 was incorrect and not adequate to ensure the summary of the safety evaluations would be included in the ABCNs. Resolution of this issue will be tracked by Assessment Follow-up Item, A-03-OSR-RPPWTP-007-A02.

In addition, Contractor approved ABCNs 24590-WTP-ABCN-ENS-02-14, *HLW Pour Tunnel Lidding Station Removal & Canister Rack Modification*, 24590-WTP-ABCN-ENS-02-22, *Update LAW PSAR*, and 24590-WTP-ABCN-ENS-02-023, *Update HLW PSAR*, did not include a summary of the safety evaluation. Rather, all included a checked block containing the following statement: "The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change." This "block statement" did not describe how the SE considered the unique changes being made to the AB. This is not a finding because, while the ABCN had been signed off, it had not yet been transmitted to ORP. The requirement is that it contains a summary SE when it is transmitted to ORP.

1.6.3 Conclusions

ABCNs approved by the Contractor did not always contain a summary of the SE. In the absence of a summary of the SE, ORP accepted the ABCN when the entire SE is provided. However, the Contractor's procedures should ensure that all ABCNs for Contractor approved changes contain either a summary of the SE as required or the complete SE.

1.7 Training of Staff for Performing AB Maintenance (ITP I-107)

1.7.1 Inspection Scope

In the November 14, 2002, letter to DOE, the Contractor stated that an AB maintenance training module is being developed which will be used to provide more advanced training in the AB maintenance process for those who are most affected. Presentation of the training module was to be completed for key individuals by December 6, 2002. In addition, the Contractor stated in the letter that the AB coordinators have experience and additional training in AB maintenance and have been assisting the design engineers in ABCN preparation.

The inspectors examined the Contractor's AB maintenance training module and interviewed several AB coordinators to determine if they have experience and training in AB maintenance in order for them to adequately perform their AB maintenance coordination activities.

1.7.2 Observations and Assessments

Records reviewed by the inspectors indicated the AB coordinators had completed specialized training. Section 1.2.2 of this report describes a lack of consistency in how Safety Checklist for Design were filled out. This indicates the training was not effective in ensuring consistency in filling out the checklists.

The inspectors reviewed the WTP Project AB Maintenance Screen training module. The module topics included: responsibilities, current authorization basis documents and their purpose and contents, definition of "change," list of affected documents, who evaluates the change, safety screening, safety evaluation, deviation from the AB, and a summary.

Four assessment follow-up items associated with the training module were identified and grouped as a single Inspector follow-up item (Assessment Follow-up Item, A-03-OSR-RPPWTP-007-A03):

- The module topic, "Not AB Change, even if text is in AB," stated in part: "Changes to SSC that do not affect system function, reliability, location or safety risk characteristics." The following examples were presented in the module as ones that do not require an ABCN: "add/delete vents and drains, change instrument type but not function, and change from horizontal to vertical pumps with same reliability." This definition is not consistent with that presented in RL/REG-97-13, Revision 9, Section 2.0 Definitions which states, "Change(s): Changes to the facility or to the administrative controls that are described in the authorization basis or relied upon by the Contractor to ensure conformance to the authorization basis." Section 2 goes on to define "facility" as the physical facility described in the AB such as; the site description, design information, and safety analysis information. The AB training module should correctly describe what facility changes and editorial changes are.
- The module topic, "Safety Screening" stated in part: "For a screening, answer only questions 1-36 on the form. Questions 37-42 pertain to the "safety evaluation." This

direction is not presented in Procedure 24590-WTP-GPP-SREG-009_0, *Safety Screening and Safety Evaluations*, effective November 4, 2002. Several design engineers thought E&NS would complete questions 37-42 on the Safety Checklist for Design. Some E&NS representatives stated the design engineer should answer those questions. Some design engineers answered the questions. In several cases the E&NS representative corrected the design engineer's answers. Failure of the training module to agree with the procedure has resulted in inconsistent completion of the Safety Checklist for Design. The individuals responsible for addressing each question on the Safety Checklists in the AB training module should be clarified.

- The module topic, "Safety Evaluation" stated in part, "E&NS will assist with answers to regulatory questions 39-44." The actual number of question varies as a function of the checklist revision. However, 24590-WTP-GPP-SREG-009_0, *Safety Screening and Safety Evaluations*, effective November 4, 2002, stated in Section 3.2.1, Safety Screening for Design Changes, "The checklist also provides a means for the reviewer to document items for which E&NS department assistance review and concurrence is obtained." Neither the training module nor the Safety Checklist for Design made clear the procedural requirement for E&NS to document its concurrence on the Safety Checklist for Design when it was used for the SE. E&NS's signature and review responsibilities for Safety checklists should be clarified in the AB training module.
- RL/REG-97-13 Section 3.5, Authorization Basis Revisions, states in a.2.iii, "Safety evaluations should be documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation can identify the technical issues considered during the safety evaluation and basis for the determination." The training module and Procedure, 24590-WTP-GPP-SREG-009_0, *Safety Screening and Safety Evaluations*, effective November 4, 2002 did not address this important aspect of the safety evaluation. As noted earlier in this report, there is a wide variation in the level of detail presented in the safety evaluations and in addressing "yes" answers on Safety Checklists. The way "yes" answers are dispositioned and safety evaluations are done should be made clear in the AB training module.

The inspectors reviewed training sign-in sheets dated November 21 and 26, 2002, titled AB Maintenance Screening. About 65 Contractor engineering, E&NS representatives, and discipline AB coordinators attended the training. At the start of the inspection, the Contractor E&NS representative presented a list identifying AB design reviewers/coordinators dated January 6, 2003. Several of these individuals were interviewed to determine if they understood and implemented their responsibilities. Two of the individuals stated they were not AB discipline reviewers. Some of the AB discipline reviewers/coordinators demonstrated a good understanding of the AB change process. The Contractor has not yet been completely successful in identifying the coordinators and ensuring they were expert in the AB change process.

Based on review of sign-in sheets held by the Process Assurance Supervisor, 260 engineering staff had received supplemental training on the AB change process. Of the design engineers responsible for completion of Safety Checklist for Design reviewed by the inspectors during this assessment, only one was not signed-in on the sheets. The engineer stated his AB Coordinator

trained him. The inspectors found the practice acceptable for those missing the formal training session.

The Employee Training Profiles for six individuals were reviewed to determine if Procedure 24590 WTP-GPP-SREG-002, Revision 4, *Authorization Basis Maintenance*, effective December 17, 2002 and 24590-WTP-GPP-SREG-009_0, *Safety Screening and Safety Evaluations*, effective November 4, 2002 were on their required reading list. As of January 6, 2003, no one had the *Safety Screening and Safety Evaluations* procedure on their Employee Training Profile. In the case of E&NS representatives, the responsible Manager produced a December 11, 2002 Memorandum (CCN: 046368) requesting the training department to place the procedures on the E&NS Stair Steps. The E&NS representative called Training on January 9, 2003 to again request the procedure be added; it was added the same day. The Engineering representative stated he decided not to place the procedure on the required reading list for his staff because Procedure 2459-WTP-GPP-SREG-02-002, *Authorization Basis Maintenance*, led the engineers to the Safety Screenings and Safety Evaluations procedure.

1.7.3 Conclusions

The AB change training described in the Contractor's November 14, 2002, letter was implemented. The effectiveness of this training was limited by its lack of consistency with RL/REG-97-13 and the AB implementing procedure.

2.0 EXIT MEETING SUMMARY

The inspectors presented preliminary inspection results to members of Contractor management at an exit meeting on January 15, 2003. The Contractor acknowledged the observations and conclusions. The inspectors asked the Contractor whether any materials examined during the inspection should be considered limited rights data. The Contractor stated no limited rights data were examined during the inspection.

3.0 REPORT BACKGROUND INFORMATION

3.1 Partial List of Persons Contacted

F. Beranek, Environmental, Safety, and Health Manager
 J. Betts, Deputy Project Manager
 C. Bogaerts, Process Engineer
 J. Charamonte, Area Discipline Supervisor
 D. Cresci, LAW, ISM Lead Safety Analyst
 S. Crow, PT Mechanical Handling Supervisor
 A. Cutrona, Mechanical Engineer
 R. Dickey, Safety and License Engineer
 T. Foote, Process Assurance Supervisor
 G. Garcia, Ventilation Engineer

K. Gibson, Safety and License Engineer
 D. Gott, HLW Plant Design Layout Supervisor
 E. Han, Compliance Engineer
 M. Higuera, Safety Engineer
 J. Hinckley, Lead Process Safety Manager PTF
 D. Klein, Nuclear Safety Manager
 G. Kostler, Engineering Supervisor
 P. Lowry, Mechanical Engineer Supervisor
 C. Meng, Senior Process Engineer
 R. Nakao, Engineering Regulatory Liaison
 B. Niemi, Safety Program Engineer
 L. Nelson, Radiological Safety Engineer
 M. Platt, Lead Safety Program Engineer
 T. Ryan, AB Coordinator
 G. Shell, Quality Assurance Manager
 E. Smith, Safety Program Engineer
 N. Sorensen, Design Engineer
 M. Stewart, Process Engineer
 B. Stiver, Process Engineer
 M. Toyooka, Safety Analyst, E&NS
 D. Wilsey, Mechanical Handling Manager
 C. Winkler, LAW Area Project Engineering Manager
 S. Woolfolk, Safety Analyst

3.2 List of Inspection Procedures Used

Inspection Technical Procedure I-107, "Authorization Basis Management Assessment"

Inspection Technical Procedure A-106, "Verification of Corrective Actions"

3.3 List of Items Opened, Closed, and Discussed

3.3.1 Opened

A-03-OSR-RPPWTP-007-F01	Finding	Failure to ensure that information related to ABCNs and Safety Evaluations are readily available for DOE review.
A-03-OSR-RPPWTP-007-F02	Finding	Failure to perform Safety Evaluations when required.
A-03-OSR-RPPWTP-007-F03	Finding	Failure to ensure safety evaluations are documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation can identify the technical

issues considered during the safety evaluation and basis for the determination.

A-03-OSR-RPPWTP-007-F04	Finding	Failure to ensure that ABCNs submitted to DOE include a summary of the safety evaluation.
A-03-OSR-RPPWTP-007-A01	Follow-up Item	Verify Procedure 24590-WTP-GPP-009_0 <i>Safety Screening and Safety Evaluations</i> had been revised to correct weaknesses as identified in Section 1.2 of the report.
A-03-OSR-RPPWTP-007-A02	Follow-up Item	Verify that direction in Procedure 24590-WTP-GPP-SREG-002, Revision 4, <i>Authorization Basis Maintenance</i> , and Form 24490-SREG-F00004, Revision 4, <i>Authorization Basis Change Notice</i> , have been modified to address the requirement from RL/REG-97-13, as identified in Section 1.6 of the report.
A-03-OSR-RPPWTP-007-A03	Follow-up Item	Verify that the AB training module has been corrected and clarified: (1) that the definition of "facility change" has been corrected; (2) the individuals responsible for addressing each question on the Safety Checklists is clarified; (3) that E&NS's signature and review responsibilities for Safety Checklists is made clear; and (4) that the way "yes" answers are dispositioned is made clear.

3.3.2 Closed

IR-99-007-01-FIN	Finding	Failure to implement a process to ensure that the authorization basis is maintained current with facility design. Closed in Section 1.4 based on opening the Findings and Assessment Follow-up Items described above.
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3.3.3 Discussed

None

3.4 List of Acronyms

AB	authorization basis
ABAR	Authorization Basis Amendment Request
ABCN	Authorization Basis Change Notice
BNI	Bechtel National, Inc.
CAR	Corrective Action Report
DCN	Design Change Notice
DOE	U.S. Department of Energy
DTD	Decision to Deviate
E&NS	Environment & Nuclear Safety Department
HLW	High Level Waste
IR	Inspection Report
ISMP	Integrated Safety Management Plan
ITS	important-to-safety
LAW	Low Activity Waste
PSAR	Preliminary Safety Analysis Report
PTF	Pre-Treatment Facility
ORP	Office of River Protection
QAM	Quality Assurance Manual
SC	Safety Criteria
SCC	structures, systems, and components
SC-I	Seismic Category I
SE	Safety Evaluation
SRD	Safety Requirements Document
WTP	Waste Treatment and Immobilization Plant