

Ownership matrix	RPP-27195
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1.0 PURPOSE AND SCOPE

(7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 7.1.6, 7.1.7, 7.1.8, 7.1.9, 7.1.11, 7.1.12, 7.1.13)

This procedure defines the process and responsibilities for control of changes to drawings for Tank Operations Contractor (TOC) facilities. This procedure defines the process for:

- Drawing Change Notice (DCN)
- Engineering Change Notice (ECN).

The engineering design change, whether developed by TOC, or vendor personnel, shall follow this process unless noted otherwise in a contract, Statement of Work (SOW), or work plan. Approval from the Chief Engineer is required if a vendor providing engineering service will generate design changes are not going to be subject to this Engineering Change Control process. New ECNs and DCNs processed in accordance with this procedure shall be created, revised, and processed using SmartPlant®¹ Foundation (SPF).

This procedure is applicable to operations and maintenance as well as projects that remove, install or tie-in to existing structures, systems, and components (SSCs).

This procedure does not apply to the following types of changes:

- Direct drawing revisions (see TFC-ENG-DESIGN-C-09)
- Changes to Plant Installed Software (see TFC-ENG-DESIGN-P-12)
- Changes to Vendor Information (see TFC-BSM-IRM_DC-C-07)
- Changes to technical documents (see TFC-ENG-DESIGN-C-25)
- Changes to Interface Control Documents (see TFC-BSM-CP_CPR-C-17)
- Changes to Electronic Routing Board (see TFC-ENG-FACSUP-C-41).

2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

3.0 RESPONSIBILITIES

3.1 Quality Assurance

The Quality Assurance (QA) organization acts in an oversight capacity by performing required inspections of modifications to Structures, Systems, and Components (SSCs). Modifications to Safety Class (SC) or Safety Significant (SS) SSCs require QA review and approval of the design modification. All Modification Quality Inspection Plans (MQIPs) shall be reviewed and approved by QA, and included in the modification by the Design Agent (See Attachment A, Section 1.0). (7.1.10)

3.2 Commissioning

The Commissioning organization ensures required tests are performed when Level 1 or 2 tests are invoked (TFC-PRJ-SUT-C-08). MQIPs that include Level 1 and 2 test requirements are reviewed

¹ SmartPlant® is a registered trademark of Intergraph Corporation, Madison, Alabama.

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and approved by Commissioning to ensure they are accurately reflected in the associated Test Plan (TFC-PRJ-SUT-C-01).

3.3 Engineering

Key responsibilities are listed in the following sections. Further responsibilities are contained within Section 4.0.

3.3.1 Design Authority

The Design Authority is responsible for:

- The technical acceptability of the change
- Ensuring design inputs and requirements are properly developed and complete
- Ensuring the engineering change control process was followed for technical baseline changes.

The Design Authority can informally delegate all activities identified in this procedure with the exception of review, approval, and the responsibilities listed above.

3.3.2 Originator, Design Agent, or Agency

The Originator is performing the role of Design Agent.

The Originator, Design Agent, or Agency is responsible for:

- Preparing the DCN and ECN in accordance with this procedure and the instructions
- Preparing the MQIP A-6006-954 in accordance with Attachment A
- Ensuring technical accuracy of the design
- Obtaining reviews and approvals.

3.3.3 Checker

The checker is responsible for checking and approving the DCN and ECN in accordance with TFC-ENG-DESIGN-C-52 and TFC-ENG-DESIGN-P-54.

3.3.4 Design Verifier

The Design Verifier is responsible for verifying the design is in accordance with TFC-ENG-DESIGN-C-52 or TFC-ENG-DESIGN-P-17, as applicable.

3.3.5 Support Engineer

The Support Engineer is responsible for:

- Verifying field work activity status
- Approving work complete and/or restored to original status.

3.3.6 Engineering Manager

The engineering manager is responsible for:

- Approving the scope of the design change
- Identifying and assigning staff (originator, checker, Design Authority, reviewers, and distribution)
- Obtaining/requesting work charging authorization for staff
- Ensuring the DCN and ECN is complete, accurate, and technically sound
- Ensuring approval of Work Authorization (WA) ECNs includes consideration of reversibility of the field work.

4.0 PROCEDURE

4.1 General Requirements

1. DCN and ECN Usage:

Changes described by DCNs only apply to current drawings, which includes the released drawing plus any released DCNs or work completed ECNs not yet incorporated

- DCNs shall not revise ECNs, impact (by reference to) changes described by non-work completed ECNs, or rely on changes made by non-work completed ECNs.
- DCNs shall be used to change drawings that do not modify facility configuration. Prepare DCNs in accordance with Section 4.2. Once issued, a DCN cannot be cancelled nor revised. To make changes that affect content of issued DCNs, a new DCN must be prepared that clearly references the original DCN content and how it should be changed. Do not list the original DCN as an affected drawing on the new DCN. List the original DCN as a reference on the new DCN.

Examples of DCNs:

- Corrections to facility drawings to describe existing configuration
 - Document as-builts to drawings including redline incorporation
 - Modify fabrication drawings
 - Modify standard detail drawings
 - Modify project status drawings.
- ECNs shall be used to document physical configuration changes to TOC SSCs. Prepare ECNs in accordance with Section 4.3. The changes shown on the ECN cannot be incorporated into the drawing until it is work-complete. An ECN may be revised or cancelled at any time before the ECN is work-complete. Temporary Modification (TM) and Work Authorization (WA) ECNs are sub-types of an ECN:

- TM ECNs shall be used to make temporary configuration changes to the TOC facilities. Prepare TM ECNs in accordance with Section 4.3. TM ECNs are initiated and tracked in accordance with TFC-OPS-OPER-C-11. A signature and date in the modification work-complete block indicates that the temporary changes have been performed. A TM ECN with the modification work-complete block signed off and dated may still be revised. A TM ECN may not be revised after the restored-to-original status block is signed. A TM ECN is not required on routine maintenance, testing, and operations activities controlled within approved work instructions. This exclusion shall not be used to circumvent the TM ECN process.
 - A WA ECN is an authorization process for minor field changes to allow field work to commence while the ECN is routing or approval. See Attachment B for minor field change examples. A WA ECN is an ECN with “Work Authorization” checked “YES” on the form. WA ECNs are initiated and/or revised in SPF.
 - SSCs modified with approved WA ECNs cannot be returned to service, energized, pressurized, activated, etc. until the ECN is approved,
 - Changes specified by WA ECNs shall meet the following criteria:
 - Shall not perform work or change SSCs that are in production service, energized, pressurized, active, etc. (e.g., not locked or tagged out of service)
 - The affected SSC shall not be embedded in concrete or otherwise inaccessible when installed and the work is not reversible without extensive demolition or rework as judged by the approving engineering manager.

A new PrHA is not required.
 - Prepare WA ECNs in accordance with Section 4.4. See Attachment B for WA ECN examples.
2. Telecon approval for any and all signatures is acceptable. See TFC-BSM-AC-STD-08.
 3. ECN and DCN forms and instructions are available at the SPF intranet Web page at <http://toc.rl.gov/rapidweb-v7/SMART/index.cfm>.
 4. Trend codes are required for ECNs and DCNs and will be recorded directly in SPF (see Attachment C, Trend Codes and Definitions).
 5. See TFC-ENG-DESIGN-D-06.1 for additional engineering change control guidance.

6. Changes made to Waste Transfer Piping Diagram P&IDs may require initiating a change to update the electronic routing board (ERB). Refer to TFC-ENG-FAC SUP-C-41 for instructions.

4.2 DCN Preparation

The following process for preparing DCNs is shown in Figure 1. DCNs are initiated and/or revised in SPF and use the “Design Impacting” workflow in SPF for initial approval and release.

- Originator
1. Define the need and scope.
 2. Obtain information on the design change to define the problem and determine the appropriate solution.
 3. Determine if a Process Hazard Analysis (PrHA) screening is required and prepare if applicable (see TFC-ENG-DESIGN-C-35).
 4. Identify all affected technical baseline (TBL) drawings, in accordance with TFC-ENG-STD-46.
 5. If implementing new or revised CSER controls, verify that every active WCA establishes compliance or is revised to establish compliance with those controls, otherwise a WCA needs to be deactivated.
 6. Prepare the DCN(s) following the SPF web page form instructions.
 7. If the DCN includes design, prepare it in accordance with the applicable codes and standards such as those identified in TFC-ENG-DESIGN-D-13.2, subsystem specification, or engineering standard.
 8. Identify reviewers/approvers in accordance with TFC-ENG-DESIGN-C-52.
 9. Conduct Technical Reviews in accordance with TFC-ENG-DESIGN-C-52.
 10. Obtain the following approvals:
 - Originator (always required)
 - Checker (as required per TFC-ENG-DESIGN-C-52)
 - Design Authority (required for technical baseline document changes only)
 - Unreviewed Safety Question (USQ) (as required per TFC-ENG-SB-C-03)
 - PrHA (as required per TFC-ENG-DESIGN-C-35)

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- Approvers (Interdisciplinary, EDLs, SMEs, etc.) as identified above in accordance with TFC-ENG-DESIGN-C-52
- Engineering Manager (always required)
- Document Control (always required).

11. Forward to a Document Control Center for release (see Section 4.6).

4.3 ECN Preparation

The following process for preparing ECN's is shown in Figure 2. ECNs are initiated and/or revised in SPF and use the "Design Impacting" workflow in SPF for initial approval and release.

Originator

1. Define the need and scope.
2. Obtain information on the design change to define the problem and determine the appropriate solution.
3. Determine if a Modification Traveler (MT) is needed and prepare if applicable. See TFC-ENG-DESIGN-C-56, Section 4.2.
4. Determine if a PrHA screening is required and prepare if applicable (see TFC-ENG-DESIGN-C-35).
5. Identify all affected TBL drawings, in accordance with HNF-1901.
6. Determine if ERB is affected in accordance with TFC-ENG-FAC SUP-C-41. Check ERB YES/NO checkbox accordingly in DCN details when prompted.
7. Verify existing configuration depicted on drawings.
 - a. Identify released change documentation against the drawings, and perform a field walkdown in accordance with TFC-ENG-DESIGN-D-51. (See Figure 3)
8. Prepare the ECN(s) following the SPF web page form instructions.
9. Prepare the MQIP A-6006-954 in accordance with Attachment A.
10. If revising an ECN, start a Revision workflow in SPF.
11. Prepare design in accordance with the applicable Modification Traveler(s), codes and standards such as those identified in TFC-ENG-DESIGN-D-13.2, specification, or engineering standard.
12. Identify reviewers/approvers as follows:
 - In accordance with TFC-ENG-DESIGN-C-52

- Quality Assurance for ECNS on Safety Class (SC) or Safety Significant (SS) SSCs
 - Commissioning for ECNs where Level 1 or 2 test requirements are specified on an MQIP.
13. Conduct Technical Reviews in accordance with TFC-ENG-DESIGN-C-52.
14. Obtain approvals.
- Originator (always required)
 - Checker as required per TFC-ENG-DESIGN-C-52
 - Design Verifier (as required per TFC-ENG-DESIGN-C-52)
 - Design Authority (required for technical baseline document changes only)
 - Unreviewed Safety Question (USQ) (as required per TFC-ENG-SB-C-03)
 - PrHA (as required per TFC-ENG-DESIGN-C-35)
 - Approvers (interdisciplinary, EDLs, SMEs, etc.) identified above in accordance with TFC-ENG-DESIGN-C-52)
 - Engineering Manager (always required)
 - Document Control (always required).
 - Quality Assurance (as identified above)
 - Commissioning (as identified as above).
15. Forward to a Document Control Center for release (Section 4.6).

4.4 Work Authorization ECN Preparation

An authorization process for minor field changes to an approved design. See Attachment B for minor field change examples. A WA ECN is an ECN with “WA or Redline” checked “WA” on the form. WA ECNs are initiated and/or revised in SPF and use the “Design Impacting” workflow in SPF for WA approval.

The following process for preparing WA ECNs is shown in Figure 4.

- Originator
1. Define the need and scope: Obtain information on the design change to define the problem and determine the appropriate solution.

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2. Determine if a new MT is required (see TFC-ENG-DESIGN-C-56), or if an existing MT is applicable.
 - a. If a new MT is required, perform the change via a full ECN per Section 4.3.
 - b. If an MT is not required or the design change is within the scope of an existing MT, continue to step 3.
3. Determine if a new PrHA screening is required (see TFC-ENG-DESIGN-C-35).
 - a. If a PrHA screening is required and results in the need for a new PrHA, perform the change via a full ECN per Section 4.3.
 - b. If the design change is within the scope of an in-process or completed PrHA screening, document the PrHA screening number on the WA ECN form and continued to step 4.
4. Identify all affected TBL drawings, in accordance with TFC-ENG-STD-46.
5. Determine if ERB is affected in accordance with TFC-ENG-FAC SUP-C-41. Check ERB YES/NO checkbox accordingly in DCN details when prompted in accordance with TFC-ENG-FAC SUP-C-41.
6. Verify existing configuration depicted on drawings.
 - a. Identify released change documentation against the drawings, and perform a field walk down in accordance with TFC-ENG-DESIGN-D-51. (See Figure 3.)
7. Prepare the WA ECN(s) following the SPF web page ECN form instructions.
 - a. Prepare design in accordance with the applicable MT(s), codes, and standards such as those identified in TFC-ENG-DESIGN-D-13.2, specification, or engineering standard.
 - b. Prepare a description of changes in sufficient details to allow work to continue.
 - c. Prepare a “WA ECN Description of Changes” section in block 16 that documents the justification of how the WA ECN meets the WA ECN criteria in Section 4.1 and provides a clear description of the changes.
8. Identify reviewers/approvers as follows:
 - In accordance with TFC-ENG-DESIGN-C-52

- Quality Assurance for ECNs on Safety Class (SC) or Safety Significant (SS) SSCs
 - Commissioning for ECNs where Level 1 or 2 test requirements are specified on an MQIP.
9. Obtain minimum WA ECN approvals for work package incorporation.
 - Originator (always required)
 - Engineering Manager (always required).
 10. Provide a copy of the WA ECN to the Planner for incorporation into the work package.
 11. If additional changes are required prior to full release of the WA ECN, go to Section 4.10.
 12. Prepare the MQIP A-6006-954 in accordance with Attachment A.
 13. Conduct Technical Reviews in accordance with TFC-ENG-DESIGN-C-52.
 14. Obtain Final Release approvals.
 - Checker (always required)
 - Design Verifier (as required per TFC-ENG-DESIGN-C-52)
 - Design Authority
 - PrHA (as required per TFC-ENG-DESIGN-C-35)
 - Approvers (Interdisciplinary, EDLs, SMEs, etc.) in accordance with TFC-ENG-DESIGN-C-52,
 - Engineering Manager (always required)
 - Document Control (always required)
 - Quality Assurance (all ECNS on Safety Class (SC) or Safety Significant (SS) SSCs and ECNs)
 - Commissioning (All ECNs where Level 1 or 2 test requirements are specified on an MQIP).
 15. Forward to Document Control for release (Section 4.6).

4.5 Redline ECNs

Detailed preparation instructions for Redline (RL) ECNs are contained in TFC-ENG-DESIGN-C-31.

4.6 DCN and ECN Release

Document Control will process and release all approved DCNs and ECNs.

- Originator
1. As appropriate, ensure the assigned planner has received the released field work ECN for incorporation into the work package.

4.7 Off-Shift DCN and ECN Release

The following process is to be used in lieu of Section 4.6 to pre-release a DCN and/or ECN, when engineering management determines field work activities need to be expedited or the Document Control is not available. The DCN or ECN will be automatically routed to Document Control following management approval.

- Originator
1. Print the following within the Release Stamp block area on page 1 of the DCN and/or ECN: "Pre-released by 'Name,' 'Date,' and 'Time.'"
 2. Provide a copy of the pre-released DCN or ECN to the planner for incorporation into the work package.

4.8 ECN Close-out Process

4.8.1 Modification Work Complete (7.1.11)

Individual ECNs shall be signed approved Modification Work Complete when their associated field work is complete. ECN work completion is performed using the "Work Completion" workflow in SPF.

- Support Engineer
1. Ensure that the work activities prescribed in the ECN have been completed, as follows:
 - A field walkdown has been performed in accordance with TFC-ENG-DESIGN-D-51 to ensure field conditions match the ECN
 - The required inspections and tests identified on the MQIP have been successfully completed. Level 1 or 2 testing has been addressed by Commissioning
 - If the work was not completed in accordance with the ECN, initiate a Nonconforming Report (NCR) per TFC-ESHQ-Q_ADM-C-02.
 2. Ensure the correct work package number(s) are identified on the ECN.
 3. Approve the ECN for Modification Work Complete.

4. Ensure that, if required, the planner has received the released field work ECN for incorporation into the work package.

4.8.2 Restored to Original Status

The following process applies to TM ECNs only. TM restoration is performed using the “Temporary Modification Restoration” workflow in SPF.

NOTE: When the temporary configuration is determined to become permanent, the ECN is still signed off as “Restored to Original Status” and a DCN is prepared to document the permanent change.

Support Engineer

1. Verify that field work activities have been completed, as follows:
 - The restored configuration matches the original field configuration.
 -
 - Any applicable acceptance testing has been successfully completed.
 -
 - If the temporary configuration is decided to become permanent, a DCN is prepared to document the permanent configuration and the DCN references the Temporary ECN number.
2. Ensure the correct work package number is identified on the ECN.
3. Approve for Restored to Original Status Complete.
4. Provide a copy of the released Restored to Original Status ECN and the permanent DCN, if applicable, to Operations.

4.8.3 Modification Work Partially Complete – Work Stoppage or Cancellation

This process applies to ECNs where field work has been performed such that the configuration of the facility is changed, but not to the extent defined by the ECN. This process is worked in conjunction with TFC-OPS-MAINT-C-01. ECN work completion is performed using the “Work Completion” workflow in SPF.

Support Engineer

1. Perform a walkdown to determine the extent of work performed and the as-left configuration of the facility.
2. Revise the ECN in accordance with section 4.3 to document the work performed and/or the as-left configuration.
3. Ensure the correct work package number is identified on the ECN.
4. Ensure that the required inspections and tests identified on the MQIP have been successfully completed.

5. Approve for Modification Work Complete in accordance with Section 4.8.1.
6. Provide a copy of the released work complete ECN to the planner for incorporation into the work package.

4.9 ECN Cancellation

This process is applicable to cancellation of ECNs (DCNs may not be cancelled).

- Originator
1. Ensure the ECN being cancelled is NOT work-completed.
 2. If the ECN is partially worked, go to Section 4.8.3.
 3. Cancel the existing ECN in SPF.

4.10 WA ECN In-Process Revision

This process is applicable to WA ECNs that have received 2-signature approval and are being worked in the field, but have not yet been through the full review cycle. The project engineer has determined that an additional change is required that also meets the criteria for a WA ECN change.

CAUTION: This process can create confusion with respect to knowing the currently approved change unless the progressive changes are carefully flagged, tracked, and identified on the ECN.

- Originator
1. Ensure the WA ECN has not been released nor work-completed.
 2. Notify the Work Planner that an additional change is in process and that the current approvals to the WA ECN are being rescinded.
 3. Rescind all current approvals on the WA ECN.
 4. Prepare the new changes, being careful to retain the previous changes.
 5. When clouding the new changes, flag each cloud as “WA ECN v1, v2,” etc.
 6. Prepare a record of revision of the WA ECN changes in the justification block titled “WA ECN Record of Change.”
 7. Clearly identify/document/explain the changes made via each version.
 8. Clearly document the justification for each change and how it meets the criteria for a WA ECN change.
 9. Return to Section 4.4, step 8.

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5.0 DEFINITIONS

Drawing Change Notice (DCN). A change to a drawing under TOC control that has no facility SSC changes associated with the change. A DCN may be used to modify a portion of a drawing or capture an as-found field condition (no field modifications are allowed).

Electronic Routing Board (ERB). An eTool used to display the in-field condition of the Waste Transfer Piping System. The ERB will eventually replace the H-14-107346 routing board drawings. See TFC-ENG-FAC SUP-C-41 for additional information.

Engineering Change Notice (ECN). A change to a drawing under TOC control that has facility SSC changes associated with the design media change.

Technical Baseline (TBL). The complete set of documents/data, identified by the Design Authority, used to identify, justify and demonstrate the physical, functional or operational requirements of configuration controlled structures, systems, and components. See TFC-ENG-STD-46 for additional information.

Temporary Modification (TM). Temporary minor alterations made to SSCs. The alterations are temporary in that they generally are expected to be installed for a short time period (see TFC-OPS-OPER-C-11).

Work Authorization (WA) ECN. An authorization process for minor field changes to approved design. A minor field change shall not require a new modification traveler in accordance with TFC-ENG-DESIGN-C-56. See Attachment B for typical minor field changes examples that range from drafting errors and landscape changes, to rotating valve handles, relocation of fixture or instruments, and correcting identification tags.

6.0 RECORDS

The following records are generated during the performance of this procedure:

- Drawing Change Notice (SPF-003)
- Engineering Change Notice (SPF-002).

The record custodian identified in the company level Records Inventory and Disposition Schedules (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

- 7.1.1 DOE O 422.1, "Conduct of Operations."
- 7.1.2 DOE-STD-1073-2016, "Configuration Management Program," Section 2.3, "Configuration Management Interfaces."
- 7.1.3 DOE-STD-1073-2016, "Configuration Management Program," Section 3.3, "Identifying and Documenting Design Requirements."

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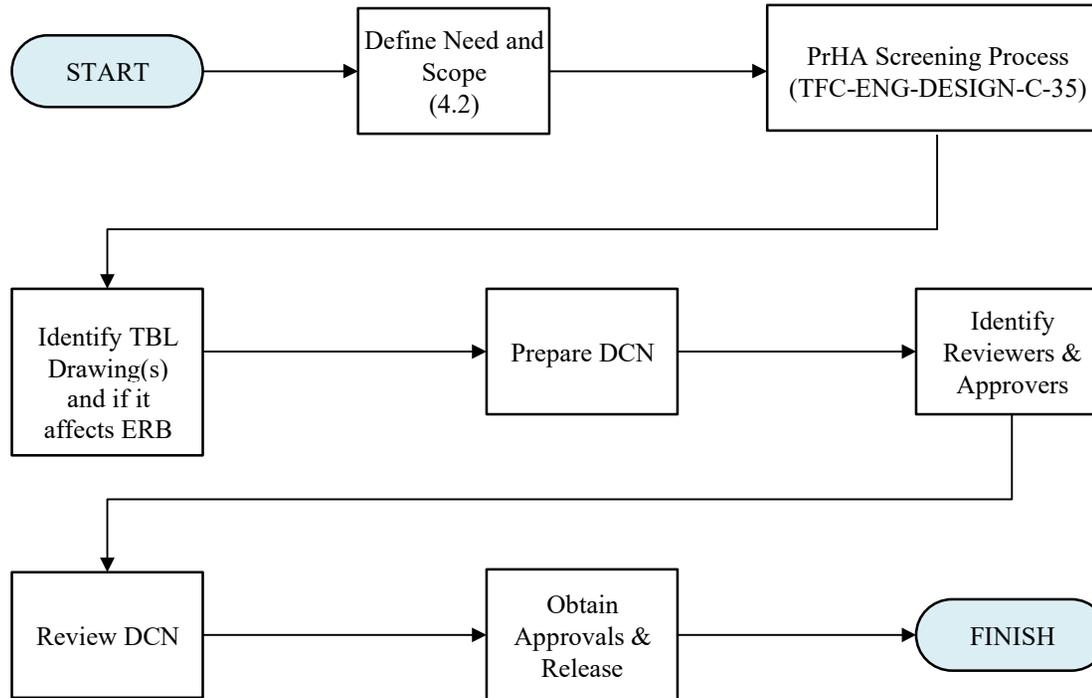
- 7.1.4 DOE-STD-1073-2016, "Configuration Management Program," Section 3.10, "Grading."
- 7.1.5 DOE-STD-1073-2016, "Configuration Management Program," Section 3.11, "Managing Design Change and Safety Bases Under Configuration Management."
- 7.1.6 DOE-STD-1073-2016, "Configuration Management Program," Section 5, "Change Control."
- 7.1.7 DOE-STD-1073-2016, "Configuration Management Program," Section 6, "Document Control."
- 7.1.8 RPP-PLAN-39432, "As-Built Program Description," Section 2.2.1, "Change Control."
- 7.1.9 RPP-PLN-39432, "As-Built Program Description," Section 4.0, "Responsibilities."
- 7.1.10 TFC-PLN-02, "Quality Assurance Program Description."
- 7.1.11 TFC-PLN-03, "Engineering Program Management Plan."
- 7.1.12 TFC-PLN-23, "Configuration Management Plan."
- 7.1.13 TFC-PLN-136, "Engineering Design Program."

7.2 References

- 7.2.1 TFC-BSM-AC-STD-08, "Level of Authority."
- 7.2.2 TFC-BSM-CP_CPR-C-17, "Interface Management."
- 7.2.3 TFC-BSM-IRM_DC-C-02, "Records Management."
- 7.2.4 TFC-BSM-IRM_DC-C-07, "Vendor Processes."
- 7.2.5 TFC-ENG-DESIGN-C-25, "Technical Document Control."
- 7.2.6 TFC-ENG-DESIGN-C-31, "Redline Engineering Change Control."
- 7.2.7 TFC-ENG-DESIGN-C-35, "Process Hazard Analysis Determination and Technique Screening."
- 7.2.8 TFC-ENG-DESIGN-C-52, "Technical Reviews."
- 7.2.9 TFC-ENG-DESIGN-C-56, "Modification Traveler."
- 7.2.10 TFC-ENG-DESIGN-D-06.1, "Engineering Change Control Guidance."
- 7.2.11 TFC-ENG-DESIGN-D-13.2, "Guidance for Applying Engineering Codes and Standards to Design."
- 7.2.12 TFC-ENG-DESIGN-D-51, "ECN Preparation and Work-Completion Walkdown."

- 7.2.13 TFC-ENG-DESIGN-P-12, “Plant Installed Software.”
- 7.2.14 TFC-ENG-DESIGN-P-17, “Design Verification.”
- 7.2.15 TFC-ENG-DESIGN-P-54, “Checking of Engineering Documents.”
- 7.2.16 TFC-ENG-FACSUP-C-41, “Electronic Routing Board Change Control.”
- 7.2.17 TFC-ENG-SB-C-03, “Unreviewed Safety Question Process.”
- 7.2.18 TFC-ENG-STD-46, “Technical Baseline Management.”
- 7.2.19 TFC-ESHQ-Q_ADM-C-02, “Nonconforming Item Reporting and Control.”
- 7.2.20 TFC-OPS-MAINT-C-01, “Tank Operations Contractor Work Control.”
- 7.2.21 TFC-OPS-OPER-C-11, “Equipment Temporary Modifications and Bypasses.”

Figure 1. DCN Process Flow Chart.



Key:

PrHA: Process Hazard Analysis

TBL: Technical Baseline

DCN: Drawing Change Notice

Figure 2. ECN Process Flow Chart.

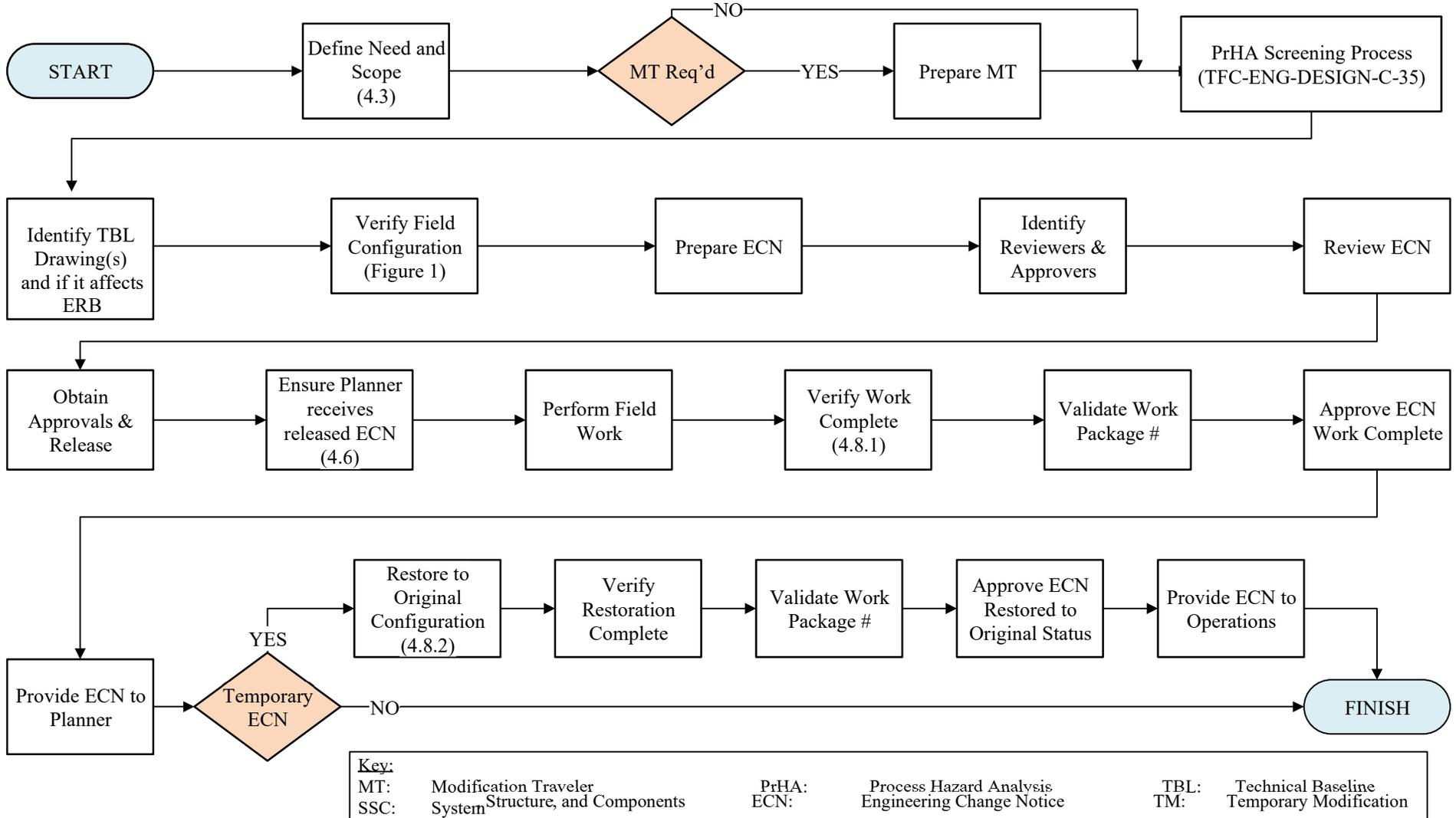


Figure 3. Guidance for Determining the Current Design Configuration.

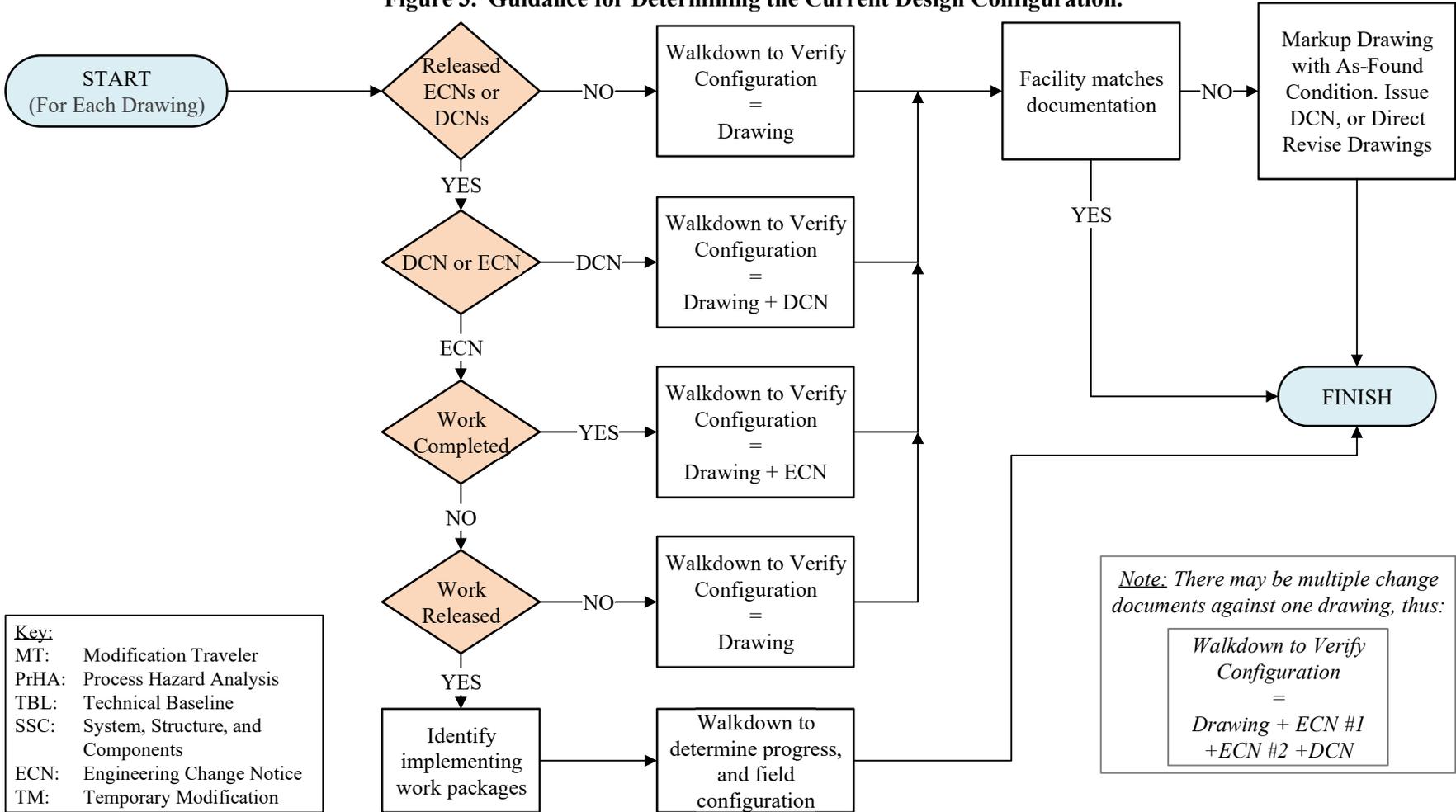
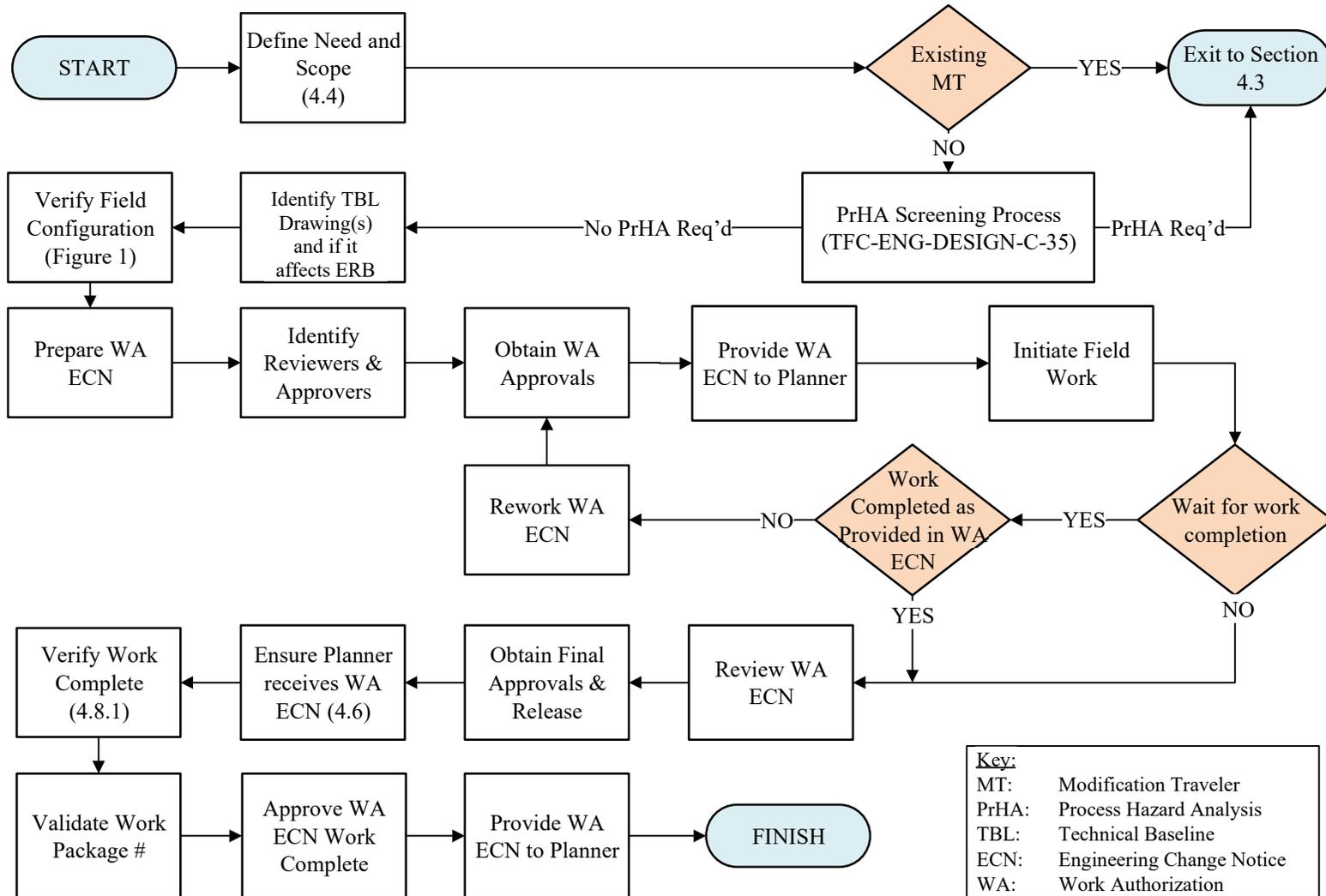


Figure 4. WA ECN Process Flow Chart.



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ATTACHMENT A - MODIFICATION QUALITY INSPECTION PLANS (MQIP)

1.0 INTRODUCTION & PURPOSE

A Modification Quality Inspection Plan (MQIP) is input to work package instructions and ensures that inspections and/or tests are performed that are needed to ensure the field condition is in compliance with the ECN/design requirements. While some tests or inspections may be implemented by other TOC processes, the MQIP ensures that specific tests or inspections not implemented by existing processes are documented such that engineering can confirm satisfactory completion. The MQIP supports effective work-completion of ECNs. The MQIP is required for safety significant/safety class related ECNs but may be required by the Design Authority for any ECN, including those designated as General Service (GS).

This appendix describes and establishes the requirements and responsibilities for the development, review, approval, revision, and control of Tank Operations Contractor (TOC) Modification Quality Inspection Plans (MQIPs). MQIPs ensure that new and modified structures, systems, and components (SSCs) are inspected and tested in accordance with the approved design, and by meeting specified acceptance criteria are capable of fully performing their design functions to meet performance requirements.

TFC-PLN-02, Part I, Chapter 3, Section 3.3, Design Process, #6 requires, in part, that the final design shall specify required inspections and tests and include, or reference appropriate acceptance criteria. Part I, Chapter 10, Section 10.2, Inspection Requirements, #1 requires, in part, that inspection requirements and acceptance criteria be included in the applicable design documents or other technical documents approved by the design organization.

2.0 INITIATION of MODIFICATION QUALITY INSPECTION PLAN REQUIREMENTS

- a. An MQIP, Form number A-6006-954, shall be prepared by the ECN Originator, in conjunction with a representative of Quality Assurance, when there is a need for inspections or tests that are not otherwise driven by existing processes (e.g. receipt inspections, inspections identified in construction specifications, Design Requirements Compliance Matrices, Functional Requirements Evaluation Documents, Safety Requirements Evaluation Documents, Quality Assurance Inspection Plans, etc.). MQIPs identify the additional critical inspection and testing requirements/activities associated with field inspections and tests for defined design during field installation of modifications. Such critical, additional inspections should be considered those that the Design Authority considers required and in addition to those not driven by existing processes. An MQIP should be initiated when the draft ECN is initiated. As a minimum, a MQIP shall be prepared for all Safety Significant ECNs. Inspections and tests are based on the function of the item or component relative to safety or other risk considerations such as code/standard compliance, complexity, uniqueness, and value of the work. Inspections and tests to be considered, that are not driven by existing processes, include:
- Inspections and tests required by applicable codes, standards and/or specifications,
 - Inspections and tests that cannot be performed after work is complete (e.g., item to be inspected will be obscured by other components, concrete pre-pour inspection, etc.),
 - Conformance to design requirements,

ATTACHMENT A – MODIFICATION QUALITY INSPECTION PLANS (MQIP) (cont.)

- Proper assembly or disassembly of components, with specific criteria, for workmanship,
 - Dimensions and installation critical to assembly,
 - Testing to ensure satisfaction of the specified functional requirements, including leak and/or pressure testing where required,
 - Personnel qualifications/certifications,
 - Verification/Witness/Hold points.
- b. Some examples of inspections and tests include:
- **Mechanical Inspection Characteristics:**
 - Torque (value; tolerance; basis; verification, witness, or hold point)
 - Fit-Up
 - Part # Verification
 - Final Configuration
 - Pressure Testing (Hydrostatic or Pneumatic)
 - Electrical Inspection Characteristics
 - Resistance (Megger)
 - Continuity
 - Civil Inspection Characteristics
 - Concrete form placement
 - Concrete slump testing
 - Drainage slope
- c. The ECN Originator identifies inspection and test requirements by also reviewing documents such as:
- Design input documents
 - Engineering Drawings
 - Design output documents
 - Applicable Codes and Standards
 - National Electrical Code, NEC
 - American Society of Mechanical Engineers, ASME standards
 - Welding
 - Nondestructive Examination
- d. Requirements to be specified for inspections and tests shall include but are not limited to:

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ATTACHMENT A – MODIFICATION QUALITY INSPECTION PLANS (MQIP) (cont.)

- Inspection and test requirements,
 - Method to be used to conduct the inspections and tests,
 - Acceptance criteria, including tolerances,
 - Sample Size/Plan,
 - Inspection/Test Organization, including Personnel qualifications/certifications, where required,
 - Witness and Hold points, In-Process and Final Inspection, as applicable.
- e. Sampling Criteria, if applicable.
- The acceptable quality level for the total population encompassed by the sample shall be specified.
 - The sampling criteria are derived from recognized industry standards such as ANSI/ASQC Z1.4-1993 or others approved by the Design Agency or CQF. Technical justification is provided for alternative criteria.
- f. The ECN Originator, in conjunction with the Design Authority, shall evaluate the processes, activities, and items to establish the level, extent and acceptance criteria for inspections/tests. The basis for assignment, level, and intensity of inspection/test applied to processes, activities, and items shall be directly related to the safety classification. The basis shall also be commensurate with the importance of a process, activity, or item’s function to human health, safety, nuclear safety, effect on the environment, reliability, maintainability, and operability.

3.0 MQIP Review and Approval

A copy of the MQIP shall either be attached to the approved ECN or issued as a part of an “RPP” document as determined by the Project Engineer or Design Authority. If the MQIP is contained in an “RPP” document, the “RPP” number must be referenced on the associated ECN(s).

MQIPs are reviewed and approved by the Design Agent, Design Authority, and QA Representative when issued as an “RPP” document in accordance with TFC-ENG-DESIGN-C-25. When attached to an ECN, QA is included as part of the ECN approval.

4.0 Revisions

When MQIPs are attached to ECNs, revisions to inspection requirements depicted on the MQIP are processed as a revision to the ECNs.

When MQIPs are implemented in an “RPP” document, revisions are processed in accordance with TFC-ENG-DESIGN-C-25.

5.0 MQIP Implementation

The required inspections and tests identified on MQIPs shall be incorporated into the applicable work package, testing, or construction specification document.

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ATTACHMENT B – WA ECN EXAMPLES

(This listing is examples of the use of WA ECNs and is not intended to be all-inclusive.)

Examples of potential WA ECNs include:

- Relocation of equipment not dimensioned on the design drawings or engineering documents.
- Relocation of non-dimensioned electrical raceway or piping (underground or above ground).
- Minor design changes needed to clear physical interference between incidental items.
- Correction of obvious drafting errors.
- Rerouting or relocation of incidental items.
- Fencing modifications.
- Minor underground utility changes.
- Addition of minor structural members to provide support for items such as grating or handrails (especially during construction).
- Adding gusset plates to stiffen structural members (especially during construction).
- Grating modification.
- Ladder modifications.
- Rotating valve handwheel orientation.
- Relocating push button on control station.
- Relocating lighting fixtures.
- Changes to or additional platforms for operation and maintenance.
- Minor relocation of a remote mounted instrument.
- Removal of failed or inactive equipment.
- Changes resulting from NCR dispositions.
- Changes reflecting as-built information.

ATTACHMENT C – TREND CODES AND DEFINITIONS

Table B-1. Document Trend Codes.

CHARACTER – 1		CHARACTER – 2		CHARACTER – 3	
CAUSE CODES		COMMODITY CODE		DISCIPLINE DRIVER CODE	
Code	Description	Code	Description	Code	Description
A	Ease of Construction	A	Architectural	C	C/S/A
B	Construction Error	B	Concrete	E	Electrical
C	Design Procedure / Specifications / Standards	C	Electrical Equipment	J	Instrument & Controls
D	Design Error *	D	Instrumentation	M	Mechanical
E	Drafting Error / Typos	E	Supports – Designed	P	Plant Design
F	Design Clarification	F	Supports – Cookbook	Z	Other
G	As-Built Documentation	G	Mechanical Equipment		
J	Initial Design Release	H	Conduits, Boxes		
K	Customer Initiated Changes	J	Piping, Tubing		
L	Vendor Issue	K	Steel (Structural, Rebar, Embeds, Misc.)		
M	Design Error related to codes and standards **	L	HVAC / Ductwork		
Z	Other Causes	M	Cable, Wiring		
		Z	Other Commodities		

* If the ECN/DCN is correcting a Design Error, then “D” shall be selected regardless of the original purpose of the ECN/DCN. Otherwise, the most prevalent cause code shall be used.

** If the ECN/DCN is correcting a Design Error related to codes and standards, then “M” shall be selected regardless of the original purpose of the ECN/DCN. “M” takes precedence over “D”. Otherwise, the most prevalent cause code shall be used.

ATTACHMENT C – TREND CODES AND DEFINITIONS (cont.)

Table B-2. Cause Code Definitions.

Cause Code	Description	Definition
A	Ease of Construction	Those changes requested by Construction to install the design in a more efficient and cost effective manner. The design is capable of being installed as originally designed.
B	Construction Error	Those instances where Construction Craft deviated from the design without Engineering approval, such as: installing components in the wrong orientation, utilizing the wrong materials, welding, construction documentation and procedural problems. (Change is typically initiated association with an Integrated Contractor Assurance System (iCAS) Action Request (AR) or an NCR.)
C	Design Procedures / Specifications / Standards	Problems/deficiencies with administrative procedures, specifications, or standards; or changes resulting from revised procedures, specifications, or standards.
D	Design Error	Issued design cannot be installed, operated, or maintained as designed. Includes omissions. Does NOT include drafting errors, typos, or interferences not caused by the Design Agency.
E	Drafting Error/Typos	Typical “drafting errors” on design documents such as: transposing numbers, incorrect reference dimensions, missing/incorrect EINs, etc.
F	Design Clarification	Changes issued to clarify specific design points, typically at the request of Construction and/or QC to ensure there will be no misinterpretation of the design intent. The design would be capable of being installed as is. Excludes interferences, drafting errors, tolerance accumulation, omissions, etc.
G	As Built Documentation	Changes issued to document as-built conditions. Excludes changes associated with PERs or NCRs.
J	Initial Design Release	Original Design Issue
K	Customer Initiated Changes	Client directed scope or preference changes. (Client = Project Manager and/or DOE.) Change must NOT fall into any other category.
L	Vendor Issues	Problems/deficiencies with Vendor supplied components caused by the Vendor. Includes Vendor documentation problems, procurement and receiving/storage problems.
M	Design Error related to codes and standards	Issued design is not compliant with codes or standards, or codes/standards have been misused or misapplied. “M” shall take precedence over “D.”
Z	Other causes	Includes all problems not categorized above.

ATTACHMENT C – TREND CODES AND DEFINITIONS (cont.)

Table B-3. Commodity Code Definitions.

Commodity Code	Description	Definition
A	Architectural	Includes all Architectural hardware, fixtures, doors, windows, etc.
B	Concrete	Includes concrete, grout and respective constituents.
C	Electrical	Equipment includes transformers, motors, motor control centers, distribution panels, batteries, lights, terminal boxes, etc.
D	Instrumentation	Includes all instrumentation.
E	Supports – Designed	Includes all uniquely designed supports. Excludes cookbook supports.
F	Supports – Cookbook	Includes all supports selected by Construction from a design generated handbook.
G	Mechanical Equipment	Includes pumps, valves, heat exchangers, tanks, filters, in-line components. Excludes motors and HVAC equipment.
H	Conduits, Boxes	Includes conduit, fittings and junction boxes.
J	Piping, Tubing	Includes all process/service piping and tubing commodities, including instrument air services.
K	Steel (Structural, Rebar, Embeds, Misc.)	Includes all non-support related structural steel and associated structures (rebar, embeds, etc.).
L	HVAC / Ductwork	Includes all HVAC duct and HVAC equipment (blowers, filters, etc.).
M	Cable, Wiring	Includes all cable and wiring, terminal blocks, connectors, etc.
Z	Other commodities	Includes all commodities not categorized above.