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200 AREA EFFLUENT TREATMENT FACILITIES
CONFIGURATION MGMT PLAN

STA-4
OCT 10 1995

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
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Document Number: WHC-SD-ETF-CM-001, REV 0

Document Title: 200 Area Effluent Treatment Facilities Configuration Management Plan

Release Date: 10/10/95

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara Broz

10/10/95

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SUPPORTING DOCUMENT

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WESTINGHOUSE HANFORD COMPANY
200 AREA LIQUID EFFLUENT FACILITIES
ADMINISTRATIVE POLICIES

Manual Chapter Page Effective Date Organization
WHC-IP-0931 19, REV 0 12 of 13 07/18/95 PSS/LES/200A LEF

TITLE:

AUTHORIZATION BASES REVIEW

ATTACHMENT 2, AUTHORIZATION BASES REVIEW FORM

Part A:

REFERENCE ITEM # WHC-SD-ETF-CM-001

Proposed Change/Discovery
(circle one)

APPROVAL DESIGNATOR 0

TITLE 200 Area LEF Configuration Management Plan

DESCRIPTION Describes responsibilities, and process used at ETF for
identification, management and control of facility configuration.

Dalh RQh
Originator Signature

10.6.95
Date

Part B:

Does the referenced item:

- (check one)
- A. Increase risk from a hazard - to the workers &/or public beyond that previously analyzed, evaluated, and documented in the Authorization Bases? NO ☒ Yes/Maybe ☐
- B. Reduce the reliability or effectiveness of features, controls, procedures, or processes used to mitigate hazards? NO ☒ Yes/Maybe ☐
- C. Introduce a hazard not evaluated in the Authorization Bases? NO ☒ Yes/Maybe ☐
- D. Reflect new information on existing hazards beyond that currently documented in the Authorization Bases? NO ☒ Yes/Maybe ☐

DETERMINATION BASES: Record complete justification and reference information below. Use Attachment 3 for continuations. Maintain with submittal package.

The 200 Area LEF Configuration Management Plan has been
reviewed for compliance with the 200 Area LEF HASP & ASA.
No significant changes were noted.

Potential Impact, No Impact,
Item Remains Open ABR Closed

☐

☒

Ken Crane
Authorization Bases Evaluator

10.6.95
Date

☐

☐

Engineering Manager

Date

200 AREA LIQUID EFFLUENT FACILITIES CONFIGURATION MANAGEMENT PLAN

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LIST OF ACRONYMS

BCSR	Boeing Computer Services Richland
CCB	Change Control Board
CDWS	Configuration Documentation Work Station
CM	configuration management
CMP	Configuration Management Plan
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department Of Energy, Headquarters
DR	design reconstitution
ECN	engineering change notice
EP	engineering practices
ER	environmental restoration
ERSDB	engineering release system database
ICWG	Interface Control Working Group
M&O	Management and Operating Contractor
MCA	material condition and aging management
MEL	master equipment list
RL	U.S. Department Of Energy, Richland Operations Office
SAR	safety analysis report
SDD	system design description
SEL	safety equipment list
SSC	structures, systems, and components
USQ	unreviewed safety question
WBS	work breakdown structure
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION

This plan describes a configuration management program for the 200 Area LEF. The 200 Area LEF configuration management plan provides the methodology to establish, upgrade, reconstitute, and maintain technical consistency among engineered requirements, physical configuration, and documentation. This plan ensures accurate technical information necessary to achieve the mission objectives that provide for the safe, economic, and environmentally sound operation and management of the 200-Area LEF.

The 200 Area LEF consist of the following facilities:

- ~ Effluent Treatment Facility (ETF)
- ~ Treated Effluent Disposal Facility (TEDF)
- ~ Liquid Effluent Retention Facility (LERF)
- ~ Truck Load-In Facility (W291)

The above four facilities are sub-projects to Hanford Environmental Compliance (HEC) Project and provide for storage, treatment and disposal of all Phase I 200 Area effluent streams.

2.0 PURPOSE

The Configuration Management Plan for the 200 Area LEF integrates technical and administrative controls to define and maintain technical consistency among configuration requirements, physical configuration, and documentation. This plan assists in managing LEF structures, systems, and components (SSC), and controls changes to the baseline configuration as established at construction turnover.

To ensure LEF SSCs and computer software (computer software is managed by WHC-SD-LEF-CSCM-001, "Computer Software Configuration Plan for 200 East/West Liquid Effluent Facilities") within the configuration management program meet design, performance, and operational requirements.

The 200 Area LEF configuration management plan conforms with DOE-STD-1073-93 "Guide for Operational Configuration Management Program", complies with the requirements established in DOE Directives, and is consistent with the direction established by the 200 Area LEF.

3.0 SCOPE

In accordance with DOE-STD-1073-93, this plan applies a graded approach for the configuration management operational phase of the 200 Area LEF.

The 200 Area LEF configuration management program is integrated with the engineering and administrative process defined by WHC-CM-4-2, Quality Assurance Manual, QR 1.0 Organization; WHC-CM-6-1, Standard Engineering Practices; WHC-IP-0932, 200 Area Liquid Effluent Facilities Conduct of Operations; the operational requirements of the work management system in WHC-IP-0932; and the technical baseline established through systems engineering process.

The configuration management program presented in this plan is comprised of five basic elements, "program management", "design requirements", "document control", "change control", and "assessments". The data recovery element "design reconstitution" and life extension program "material condition and aging management" is also applied as required. The configuration management program for the 200 Area LEF uses existing WHC programs, processes, and implementing procedures to the extent deemed appropriate to a graded approach.

4.0 OBJECTIVES

This plan delineates the configuration management program for the 200 Area LEF with the following objectives:

- Identification and maintenance of SSC-associated documents within the scope of the 200 Area LEF configuration management program.
- Ensure the continuing integrity and technical relationships of technical requirements, physical configuration, and documentation.
- Assessment of the configuration management program effectiveness.
- Support conduct of operations to ensure that consistency between design requirements, physical configuration, and documentation is maintained during all modes, including operating, shutdown, and while performing facility modification, corrective and preventive maintenances.

5.0 200 LEF ROLES AND RESPONSIBILITIES

Roles and responsibilities are defined to ensure that functional organizations are aware of the roles and responsibilities required for implementation of the configuration management program. The following section specifies general LEF organizational roles and responsibilities. Responsibilities for the conduct of configuration management activities are also defined in specific implementing engineering practices or procedures identified throughout this plan.

5.1. Process Engineering Manager

The process engineering manager will ensure that the provisions of this plan are implemented and will:

- Have the responsibility of the design authority for the 200 Area LEF to ensure the adequacy of the engineering design process and the design documents (products) produced for that process.
- Implement and manage the configuration management program in accordance with this plan.
- Approve the development, designation, and maintenance of the technical baseline of the 200 Area LEF.
- Ensure that complete, accurate, and valid engineering documentation (drawings, text documents, and vendor information) is developed and maintained consistent with LEF physical configuration.
- Identify and manage technical boundaries and interface characteristics.
- Maintain overall control of all 200 Area LEF engineering documentation.
- Ensure cognizant engineering support in accordance with the engineering process guidelines of WHC-IP-1026, Engineering Practice Guidelines, EPG-1.0 and paragraph 2.1.2 of this plan.
- Ensure that change control procedures are used to maintain technical consistency among the requirements, the physical configuration, and the documentation.
- Ensure that approvals and reviews are obtained for appropriate engineering documents.
- Ensure assessments are conducted to evaluate configuration management effectiveness in maintaining the technical relationships between documentation and facility configuration.

5.2. Cognizant Engineer

In addition to the cognizant engineer duties identified in WHC-IP-1026, EPG-5.2, the 200 Area LEF cognizant engineer will:

- ~ Ensure appropriate approvals and reviews are obtained for original designs and subsequent changes.
- ~ Assist in the development and maintenance of 200 Area LEF SSCs.
- ~ Identify and manage technical boundaries and interfaces.
- ~ Control the technical baseline using approved implementing procedures and databases.

5.3. Operations

Operations will ensure that the conduct of operations is implemented in accordance with WHC-IP-0932 to promote safe and reliable 200 Area LEF operations. Operations will support the configuration management by ensuring that no plant physical configuration change is allowed without proper documentation, change documentation is complete prior to approvals, and operating procedures utilize systems in the manner specified by Engineering.

5.4. Maintenance

Maintenance will ensure that:

- The conduct of maintenance is applied at the 200 Area LEF in a manner to maintain equipment in a safe and reliable operational condition in accordance with the work management and job control systems DOE Order 4330, and WHC-IP-0932.
- All changes are documented and approved before implementation.
- Maintenance will perform no unauthorized substitution of like-kind equipment, or maintenance requirements to the appropriate maintenance procedures, tests, and parts.

5.5. Quality Assurance

As requested, Quality Assurance will:

- Develop audit plans, checklists, and assessment criteria and conduct periodic assessments of configuration management requirements and their implementation.
- Verify that procedures related to configuration management are implemented in accordance with WHC requirements and procedures.
- Participate in the configuration management process of change control and design verification through inspections, audits and surveillances.

6.0 PROGRAM MANAGEMENT

The Facility Manager ensures adequacy of the overall configuration management of 200 Area LEF. The Process Engineering Manager ensures adequate implementation of configuration controls. The facility management and staff are responsible for upkeep of a working CM Plan.

The application of controls specified in the DOE Maintenance Management Program, Hazard Baseline Documentation, WHC Standard Engineering Practices, Quality Assurance Manual, Safety Analysis Manual, Document Control and Records Management Manual, Engineering Practice Guidelines, Work Management, Workmanship Standards, Maintenance Administration Manual, and 200 Area Liquid Effluent Facilities Conduct of Operations will maintain fidelity of design media to the plant physical configuration.

6.1. Program Planning

The configuration management program is implemented in the following three phases:

- Phase 1 - Develop an implementation strategy for the CM Plan.
- Phase 2 - Implement the CM Plan in accordance with the implementation strategy.
- Phase 3 - Perform on-going assessments of the CM program.

6.2. Baseline Management

Baseline management integrates and controls quantitative criteria of technical, cost and schedule as discussed below.

6.3. Technical Baseline

The technical baseline is the set of technical requirements for the functional and physical characteristics associated with a SSC. SSC classified as important to safe operations are listed in WHC-SD-LEF-TI-002, "200 Area Liquid Effluent Facilities Safety Structures, Systems and Components List". Class 3 SSC are controlled in a slightly more rigorous fashion than the remaining undesignated SSC. SSC are itemized in the Job Control System Master Equipment List.

The technical baseline for the 200 Area LEF SSCs are collectively compiled in documents released into the WHC Document Control System and controlled by Boeing Computer Services Richland (BCSR) as design media such as drawings, logics, one-lines, Vendor Information, and into the Job Control System as specifications for lubricants, spare parts, etc.

6.4. Equipment Scope Criteria

Differentiation in requirements between classes of SSCs that are included in the 200 Area LEF configuration management program are not significant in terms of good engineering practices, therefore, all SSC are included in this program and are identified in the following documentation:

- ~ Master equipment list - JCS system
- ~ Safety equipment list developed for the 200 Area LEF. - SSC list.
- ~ H2 essential drawing - 200 Area LEF Essential and Supporting Drawing List.
- ~ Various system interface drawings established by Facilities' Drawings.

6.5. As-Built Process

The as-built process embodies the elements of configuration management to produce accurate documents, primarily drawings, that have been validated through field inspection to reflect the actual existing physical configuration.

For the 200 Area LEF, walkdowns were performed by the Design/Construction contractor prior to turnover to ensure that the as-found SSC physical configuration conforms with the design documentation.

Design media were verified for accuracy by the Cognizant Engineer during field walkdown of the SSCs in preparation for startup, pre-operational testing and operational readiness reviews. Discrepancies found were documented and transmitted to the D/C contractor for corrective actions.

These design media and vendor information verified by field walkdown documenting the completion of construction and turnover to operations provide the baseline for the physical configuration of the 200 Area LEF. The design media and vendor information submitted to the 200 Area LEF are documented in the Master Submittal Index.

6.6. Concepts and Terminology

The WHC standard configuration management concepts and terminology are established and maintained in WHC-CM-6-1. Terms and definitions used in this plan are provided in the glossary of this plan.

6.7. Interfaces

The organizational and technical interfaces necessary for the 200-Area LEF configuration management program are identified and controlled by Environmental Compliance Interface documents, Memoranda of Understanding and Agreement.

6.8. Databases

Databases that support the 200-Area LEF configuration management program identify computer software, documents, design bases, design requirements, and change request status to identify, store, control, status, and retrieve information.

- The engineering release system database (ERSDB) tracks the status of released engineering documents and the subsequent changes to those engineering documents.
- The Master Equipment List (MEL), consistent with the SSC scope is developed and maintained by the Job Control System in the Conduct of Operations WHC-IP-0932, Sec.8.
- Automatic data processing supporting the job control system (reference Conduct of Operations, WHC-IP-0932, Sec.8 - Job Control System JCS-2) provides support for the 200 Area LEF maintenance and modifications.
- MCS databases for both ETF and TEDF provides monitoring, control and archiving functions for both areas.

6.9. Procedures

The procedures specified in this configuration management plan provide the details that implement the criteria of this plan. Procedures providing detail for LEF in-house document control and change control to meet new requirements shall be generated when required.

WHC-IP-0931 *200 Area LEF Administrative Policies*, Section 7 "Plant Review Committee", WHC-IP-0932 *200 Area LEF Conduct of Operations*, Section 8.2 "Work Control", Sections 16.1, 16.2 and 16.3 "Operations Procedures" specify the controls for preparation and control of procedures, manuals, and other documents and changes thereto. Procedure approvals are in accordance with WHC-CM-3-5 Document Control and Records Management Manual, Chapter 12.7 "Approval of Environmental, Safety, and Quality Affecting Documents".

6.10. Configuration Management Training

The LEF facility manager has overall responsibility for personnel training. The line managers are responsible for proper training of their personnel. The LEF Training organization plans, administers and maintains a training program, manuals and materials to meet requirements for Conduct of Operations, and technical controls. The process engineering manager ensures adequate training of the process engineering group to the requirements of WHC-CM-6-1 and the guidelines of WHC-IP-1026. As procedures and related configuration management training needs are established, associated training will be implemented.

6.11. Vendor and Contractor Control

Vendor and contractor control ensures that the 200-Area LEF vendors and contractors meet WHC configuration management requirements for the conduct of their work as specified in Statements of Work or Letters of Instruction.

Vendor and contractor control requirements include the following:

- Vendors and contractors capability to provide contract deliverables that comply with technical and format requirements of WHC specifications.
- The physical configuration of SSCs provided is identical with all documentation (drawing and text) including approved changes.
- All approved changes are incorporated before final turnover to the 200 Area LEF design authority.

- ~ Construction/modification drawings and media comply with SDC 1.3 "Preparation and Control of Engineering and Fabrication Drawings" and the reproducibility of the information submitted, before final turnover of documents to the 200-Area LEF design authority.
- ~ Vendor technical information (manuals and notices) is identified, collected and controlled in accordance with WHC-CM-6-1, EP-3.3

7.0 DESIGN REQUIREMENTS

The design requirements element of the configuration management program includes functions that establish and maintain technical documents, associated design basis and the SSCs generated from these documents.

7.1. Design Engineering Process

The process engineering group is responsible for the design engineering at the 200 Area LEF. The design process is performed in accordance with the requirements of WHC-CM-6-1 and the guidelines in WHC-IP-1026, EPG-1.0. The process engineering group ensures that the design basis documents and requirements documents are identified and maintained consistent with the design bases. Operating, maintenance and testing procedures are maintained consistent with the design requirements by document approval of the equipment's Cognizant Engineer. Design media such as drawings and textual materials are maintained current via Engineering Change Notice process, and are tracked by the ERSDB.

7.2. Establishment of Design Basis

The design basis is composed of design inputs, design constraints, analysis and calculations. The design bases are formally established, documented, maintained, and correlated with the design requirements as prescribed in WHC-IP-1026 EPG-2.0 and WHC-CM-6-1 EP-1.11 and EP-1.12.

Design verifications are performed in accordance with WHC-CM-6-1, EP-4.1, to determine the adequacy of design basis for existing SSCs. If the design basis is inadequately documented, inaccurate, or missing, the design basis is recovered through the design reconstitution process (See Section 12).

7.3. Establishment of Requirements

Design Requirements are the design outputs such as drawings, specifications, calculations etc. They depict the required configuration of the 200 Area LEF.

Requirements are formally established, documented, and maintained. Design verification is performed in accordance with WHC-CM-6-1, EP-4.1 to determine if the requirements are adequate. If the requirements are inadequately documented, inaccurate, or missing, then the requirements are reconstructed through the design reconstitution process (See Section 12).

7.4. Graded Approach

A graded approach has been used in accordance with WHC-CM-4-46, *Safety Analysis Manual* Section 9.0, "Safety Classification of Structures, Systems, and Components" to classify SSCs. In addition, the graded approach is used per DOE-STD-1073-93 "Guide for Operational Configuration Management Program" to determine the level of analysis, documentation, and action necessary to support an SSC commensurate with the selected safety class.

7.5. Equipment List

Equipment contained on the Master Equipment List in the JCS-ADP identifies facility SSCs. In addition, WHC-SD-LEF-TI-002 "200 Area LEF Safety Equipment List" identifies the safety related SSCs controlled within the 200-Area LEF configuration management program.

7.6. System and Process Boundaries

System and process boundaries are established for the 200 Area LEF SSCs. Individual Cognizant Engineers control interfaces for assigned systems. System boundaries as depicted on Piping and Instrumentation Diagrams are used for intersystem boundaries. Engineering interface control documentation is established in accordance with WHC-CM-6-1, EP-1.5.

The process engineering group functions as the interface control group to identify, establish, document, and control all physical and functional interfaces of the 200 Area LEF SSEs within the configuration management program. The Process Engineering Manager is responsible as the interface coordinator.

A graded approach is used to ensure the level of interface control is consistent with requirements and needs of 200-Area LEF. Additionally, a graded approach is used for any reconstitution effort that is conducted to establish interface control information.

The cognizant engineer will identify, establish, document and control all physical and functional interfaces of any new SSC modifications.

8.0 DOCUMENT CONTROL

The document control element identifies and maintains documents within the configuration management program consistent with the physical configuration and design requirements. This is accomplished by identifying the specific documents, storing and controlling, tracking, and retrieving these documents.

8.1. Identification of Documents

Documents controlled by the 200 Area LEF configuration management program include design drawings, engineering procedures, specifications, system design descriptions, processes, Auditable Safety Analysis, operation and maintenance procedures, and vendor information. All Design/Constructor generated submittal applicable to the ETF, Truck Load-In, and LERF are listed in the Master Submittal Index applicable to the facility.

- The Cognizant Engineer, with the Process Engineering Manager's concurrence, evaluates the supplied documents required based upon criteria in the D/C Specification, design descriptions and related engineering documents.
- A graded approach identifies any missing document types and the specific documents that are required for support of SSCs.
- The Cognizant Engineer verifies the technical content of identified documents to the facility as constructed.
- For documentation omission or increased requirements, the Cognizant Engineer and Process Engineering Manager will evaluate on a case-by-case basis, those types of documents required for adequate description of the SSC, and as required, reconstitute the design information from available resources, then enter the reconstituted design media into the appropriate document control station.

8.2. Documentation Requirements

Requirements are reflected in the five major categories of engineering documents as defined in WHC-CM-6-1, EP-1.1: drawings, specifications, vendor information, supporting documents, and selected types of environmental engineering documentation. All technical documents have unique identification numbers to facilitate document retrieval, statusing, change development, and linkages to other documents and SSCs.

- Drawings - all 200 Area LEF drawings are prepared and released in accordance with Hanford Plant Standards, SDC-1.3, and WHC-CM-6.1 EP-1.3.
- Specifications - Single-use and multi-use specifications are prepared and documented in accordance WHC-CM-6-1, EP-1.2.

- Vendor Information - VI documents are identified and controlled in accordance with WHC-CM-6-1, EP-3.3.
- Supporting Documents - SDs are prepared and documented in accordance with WHC-CM-6-1, EP-1.12.
- Environmental Engineering Documents - are prepared and documented in accordance with WHC-CM-3-6, *Uniform Publications System*, and WHC-CM-7-5, *Environmental Compliance*.

8.3. Storage

Responsibility for document archival storage, permanent storage for one-of-a-kind records, and access control is established, and original or master copies of configuration management documents are stored and protected as assigned to BCSR and documented by WHC-CM-3-5, Document Control and Records Management Manual.

Retention times are established to meet the document owners and users (see WHC-CM-3-5, Section 4) paperwork reduction requirements. Documents are retained at a minimum until facility turnover for decontamination and decommissioning (D&D).

8.4. Control and Tracking

The ERSDB is the master document control and release system database for statusing of documents and related changes to controlled documents. The status of each released document and engineering change notice (ECN) is maintained on the ERSDB by BCSR.

- Configuration Documentation Work Stations (CDWS) are used to release engineering documents and track and status related changes. All documents are transmitted by EDT to the CDWS. The CDWS is responsible to control the accurate representation of the 200-Area LEF configuration in accordance with WHC-CM-6.1.
- Only the current version of a document and related outstanding ECNs of identified documents are used. Changes to released documents are maintained by the ERSDB and on the Hanford Local Area Network Soft Reporting as Drawing and Document Change Status.
- Documents listings in the ERSDB cross-reference/identify documents related to: particular SSCs, SSC type, technical topics, other relational information as may be necessary.

- The 200 Area LEF will maintain certain documents used during normal operation of the facility. These documents will be of the same revision with changes as those in ERSDB and will be maintained. These documents will be on distribution for all changes. In case changes are to be made, the COG obtains a copy of the latest revision from ERSDB along with outstanding ECNs prior to making revisions. The requirements of WHC-CM-3-5 apply to the LEF Document Control Station when established.

8.5. Retrieval

Technical documents are retrievable, upon request, from CDWS or BCSR. When a copy of a document is issued, the document includes the identification of the outstanding changes and the references to the detailed information regarding such changes.

9.0 CHANGE CONTROL

Change control is the systematic evaluation and coordination process that ensures proposed changes are identified, evaluated, approved, documented, implemented, and tracked. Changes (ECNs) at the 200 Area LEF are identified and documented in accordance with WHC-CM-6.1, EP-2.2.

9.1. Identification of Changes

All permanent and temporary changes to the requirements, physical configuration, or documentation are identified and documented. The Cognizant Engineer is responsible for changes to assigned SSCs, in accordance with the requirements of EP-2.2. Sufficient information to permit adequate design verification review of the change proposal is made available by the Cognizant Engineer to the verifier. This information generally includes, but is not limited to the following:

- A complete, clear, and accurate description of the change.
- A clear and accurate justification of why the change is required.
- Constraints (if there are any limits to what can be done during change implementation).
- A description of the impact.
- Source material that requires or requests a change, is identified or included as part of the change package. Types of source material may include nonconformance reports; software problem reports; and procurement, maintenance, and operations correspondence.
- Results of analysis or calculations to support the change.

9.2. Change Process Procedures

Two change categories are addressed, programmatic changes and ECN changes.

9.3. Programmatic Changes

Programmatic assessments evaluate the adequacy of the 200 Area LEF configuration program and implementing procedures. Discrepancies within the program are captured during periodic assessments that identify the deficiency. The LEF uses the action management system to document, track and schedule resolution. In addition, this document identifies areas within the configuration management program that are reviewed for potential enhancements within the configuration management program.

9.4. ECN Change Control

Technical changes are proposed, justified, evaluated, dispositioned and authorized for implementation by the following process. Changes to computer software are made in accordance with Step 11 of this plan. Changes to technical documents are through the ECN process in accordance with WHC-CM-6-1, EP-2.2. Approvals are in accordance with WHC-CM-3-5 Section 12.7, "Approval of Environmental, Safety and Quality Affecting Documents". Minimum approvals are the Cognizant Engineer and Process Engineering Manager.

9.5. Technical Change Reviews

All ECNs are evaluated in accordance with WHC-CM-6-1, EP-2.2. The Process Engineering Manager designates a qualified individual other than the originator to review an ECN. Change reviews typically include the following:

- Determine the validity of the change.
- Identify all affected SSCs and associated documentation.
- Determine the appropriate acceptance testing criteria (post-implementation)
- Identify the impact to other projects or services not associated with the original change proposal.
- Determine the impact on the technical, cost, and schedule baselines and other documents within the 200 Area LEF.
- Ensure that mission objectives will be met or that the change will not interfere with the accomplishment of the mission.
- Ensure that the proposed change contains no impact to National Environmental Pollution Act or facility Authorization Bases.

9.6. Management Change Reviews

The Process Engineering Manager will review changes in accordance with WHC-CM-6-1, EP-2.2 (including those that involve a change to cost and schedule baselines), to ensure that the technical reviews have been performed adequately, that the change package is complete and ready for implementation, and that any external approvals are obtained before implementation.

9.7. Implementation of Changes

Approved changes may affect only documents or SSCs and their associated documents. The Cognizant Engineer is responsible for adequately implementing the changes in accordance with the requirements of WHC-CM-6-1 Standard Engineering Practices.

- Changes to drawings or documents are incorporated in accordance with WHC-CM-6-1, EP-1.3 and EP-2.2. The cognizant engineer is responsible for issue of the required ECN and related instructions.
- Implementation of an approved change to an SSC is authorized by an ECN and accomplished by a work request in accordance with the job control system established in WHC-CM-1-8, Work Management and WHC-IP-0932, 200 Area LEF Conduct of Operations, Section 8 "Work Control". All completed work requests will be reviewed, inspected and tested (if required) in accordance with Step 10.4 of this plan to determine if the changes meet its post-implementation acceptance criteria.

9.8. Documentation of Changes

The closeout of work completed change and post change acceptance testing is performed in accordance with WHC-CM-6.1, EP 2.2 and WHC-IP-0932, 200 Area Conduct of Operations, Section 8, Work Control. Revision of facility drawings and documents affected by ECNs are performed in accordance with EP-1.3 and WHC-SD-LEF-EDL-001, "200 Area LEF Drawing List".

Verification of the physical configuration of the SSC after implementation of the change (ECN) is performed as a step in the work control process. Traceability between actual work performed, the authorizing ECN and the actual physical configuration is maintained by the ERSDB and is controlled by the ECN.

9.9. Change Control Tracking

The current status of released technical changes (i.e. ECN) against any technical document is tracked via the ERSDB and available from the CDWS. Each ECN will reference other affected technical documents and references to those documents will be included in the ERSDB.

10.0 ASSESSMENTS

Assessments are performed in establishing and maintaining the basic configuration management relationships. Initial, programmatic and periodic assessments are performed by the 200 Area LEF to ensure CM program effectiveness in maintaining the accuracy among design requirements, physical configuration and facility documentation in controlling the technical baseline.

10.1. Programmatic Assessments

Programmatic assessments evaluate the adequacy of the 200 Area LEF configuration program and implementing procedures. Discrepancies within the program are captured in the compliance matrix which identifies the deficiency and tracks the resolution. In addition, this matrix identifies areas within the configuration management program that, although not considered weaknesses, are being reviewed for potential enhancements within the configuration management program.

10.1.1. Initial Assessments

An initial assessment was performed at the transition phase of the 200 Area LEF from the Design/Constructor to WHC. Initial assessments included the following:

- Design/Constructor drawings, documents and submittals are reviewed by the cognizant engineers evaluating the accuracy of the design requirements, design changes, physical configuration and documentation.
- Physical walkdowns of mechanical, electrical and instrument systems routing, equipment types and installation, and instrument verification are performed by the cognizant engineer, the work control group, operations personnel and maintenance as part of pre-operational tests reviews, operational readiness reviews, and maintenance checkouts to ensure that the technical information depicted on engineering drawings and documents accurately reflects the actual existing physical configuration.
- Assessment tests and performance monitoring to ensure the accuracy among design requirements, equipment performance and documentation.

As a result of initial assessment, strengths and weaknesses of existing programs appeared, and control procedures were developed where upgrade actions was necessary. As corrections were incorporated, the baseline data was validated, and resulted in the following conditions:

- ~ Discrepancies identified between drawings and technical documents and as-found configurations were documented and dispositioned.
- ~ Identification of deficiencies in areas where design reconstitution may need to be applied.

10.1.2. Post Implementation Assessments

Post implementation assessments are performed by the cognizant engineer to ensure that discrepancies are adequately addressed and corrected.

Where system design basis document is developed by the design reconstitution program, a field validation is performed by the cognizant engineer to ensure consistency among the requirements, physical configuration, and documentation.

10.1.3. On-going Assessments

The Process Engineer Manager will arrange to perform internal self-assessments on the effectiveness, adequacy and implementation of this CM program. The results of these assessments will establish the basis for improvements or corrective action.

10.2. Physical Configuration Assessments

Physical walkdowns are part of the initial and on-going assessments in accordance with this plan and the JCS program. During walkdowns, SSC (component) identification checks are made to establish the existence and accuracy of the documentation associated with the SSC.

If discrepancies are discovered, appropriate corrective actions are developed and implemented to establish agreement between the physical configuration and the documentation.

- ~ The corrective actions include additional walkdowns to characterize and determine the extent of the problem.
- ~ The corrective actions include evaluations to determine whether the physical configuration or the documentation should be changed.

10.3. Periodic Equipment Performance Monitoring

200 Area LEF SSCs that require monitoring of performance is subjected to routine surveillance and testing to determine if the equipment still meets its design requirements.

Periodic testing and surveillance of SSC is performed in accordance with WHC-CM-0932 200 Area LEF Conduct of Operations Section 8.1 "Control of Equipment and System Status", Section 8.2 "Work Control", and WHC-CM-0931 Section 8, "Preventive Maintenance and Surveillance." Special procedures required for periodic or surveillance testing is generated by the cognizant engineer in accordance with WHC-CM-0932 Section 16. Monitoring addresses surveillance actions, periodic inspections and tests and other monitoring of SSCs to ensure safe and reliable operation of the SSC.

Surveillance and Monitoring include measurements to collect trend data for actual aging degradation of equipment, as determined by the material condition and aging (MCA) management program (See Section 13). The cognizant engineer will determine the need for a program for surveillance and collection of trend data if required.

10.4. Post Modification Testing

The SSCs are tested after modification/maintenance to determine if the equipment still meets its design requirements before being returned to operations in accordance with WHC-CM-0932 Sec.8.1 "Control of Equipment and System Status" and Sec.8.2 "Work Control". The cognizant engineer will identify the special requirements and or procedures required for such test.

11.0 SOFTWARE CONFIGURATION MANAGEMENT

Software configuration management applies to all software and associated documentation used, as a minimum, for scientific analysis, engineering design (computer aided design) and analysis, and hardware operational applications. Administrative or office computer software used for non-engineering, non-scientific, or non-operational applications is not controlled by this plan.

The Software Configuration Management Plan for the two Monitor and Control Systems (MCS) that operate the ETF and the TEDF are described in WHC-SD-LEF-CSCM-001 Rev.1.

This plan identifies and defines the configuration items in the two systems, controls the changes to the software through established practices and establishes the documentation of the verified software employed and its supporting documentation.

12.0 DESIGN RECONSTITUTION

The adjunct program of design reconstitution is a one-time effort of identifying, retrieving, evaluating, verifying, and regenerating missing critical design requirements and design bases. Where design information for existing SSCs was found to be inadequate, design reconstitution is applied using a graded approach to establish, organize, and document design information for SSC and topical design media documentation.

In reconstitution, the adequacy of existing design information to allow safe, efficient operations and maintenance is technically evaluated to determine the extent and priority of the design media reconstitution needed. The Process Engineering Manager will then identify which existing design information is required based on the extent and priority of the reconstitution needed. The re-creation of calculations, specifications and other design criteria may be required if vendor information or project files do not contain the needed data. Any lack of data relied upon to maintain Class 3 SSCs shall be have priority over Class 4 data reconstitutions, and the lack may constitute an Authorization Bases Discovery.

13.0 MATERIAL CONDITION AND AGING

The adjunct program of material condition and aging (MCA) management program assesses the material condition of potentially life-limiting components of the facility, estimates the remaining life of components, develops techniques that will extend the life of components, and develops analytical and periodic testing procedures to measure aging degradation trends. The objective of the MCA program is to prevent the failure of life-limiting components from aging degradation and the associated impact on facility operations. Aging degradation can so impair the performance capability of equipment that it no longer meets its design requirements, which can compromise the integrity of the basic technical relationship.

If the 200 Area LEF management determines an MCA program is warranted, a program plan and appropriate implementing procedures will be prepared. The program plan is based on implementation considerations and initial assessments, and will address the same topics identified in the configuration management plan. Although the MCA is an adjunct program of configuration management, the MCA program will be prepared separately and issued as a stand-alone supporting document.

14.0

REFERENCES

1. DOE-1073-93 - Guide for Operational Configuration Management Program.
2. SDC-1.3 - Preparation and Control of Engineering and Fabrication Drawings.
3. WHC-CM-1-3 - Management Requirements and Procedures.
MRP 5.12 - Identifying and Resolving Unreviewed Safety Questions.
4. WHC-CM-4-46 - Safety Classification of Systems, Components, and Structures.
5. WHC-CM-1-8 - Work Management.
6. WHC-CM-2-5 - Management Control System.
7. WHC-CM-3-5 - Document Control and Records Management Manual, Section 12.7, - Approval of Environmental, Safety, and Quality Documents.
8. WHC-CM-3-10 - Software Practices.
9. WHC-CM-6-1 - Standard Engineering Practices.
10. EP-1.1 - Engineering Document Identification Requirements.
 - a. EP-1.2 - Engineering Specifications Requirements.
 - b. EP-1.3. - Engineering Drawing Requirements.
 - c. EP-1.5 - Interface Control Requirements.
 - d. EP-1.6 - Engineering Data Transmittal Requirements.
 - e. EP-1.7 - Engineering Document Approval and Release Requirements.
 - f. EP-1.12 - Supporting Document Requirements.
 - g. EP-2.2 - Engineering Document Change Control Requirements.
 - h. EP-3.3 - Vendor Information Requirements.
 - i. EP-4.1 - Design Verification Requirements.
 - j. EP-4.2 - Testing Requirements.
11. WHC-CM-8-8. - Job Control System, JCS-2, "Automatic Data Processing"
12. WHC-IP-1026 - Engineering Practice Guidelines.
 - a. EPG-1.0 - Engineering Process.
 - b. EPG-5.2 - Typical Cognizant Engineer Responsibilities.
13. WHC-CM-4-3 - Quality Assurance Manual

15.0

GLOSSARY

Aging Degradation - Aging effects that could impair the ability of structures, systems, and components to meet their design requirements.

As-Found - Information, often in the form of marked-up documents, that reflects the actual physical configuration and identifies any discrepancies with currently-approved facility documentation.

Baseline - A set of documented decisions that constitute an established reference position for control, status accounting, reviews, assessments, and changes. These decisions are delineated in selected technical and programmatic documents that are identified and controlled. Baselines are continually changing via an orderly control of changes as required by DOE-HQ, RL, and the configuration management programs, especially during the development phase. Therefore, the current baseline is always the previously approved baseline with all approved changes.

Change - Any alteration or addition, temporary or permanent, to the physical configuration, computer software, configuration management documentation, or design requirements. Changes not within current design requirements involve design changes. Identical replacements are not changes.

Change Control - A process that ensures all changes are properly identified, reviewed, approved, implemented, tested, and documented.

Change Request - The document used to initiate changes to approved program cost, schedule, and technical baselines and uniquely identified by a change identification number. The change request is used to document change proposals that require dispositions by RL.

Computer Software - A set of computer source codes and/or commercial software, with the procedures, rules, and associated documentation and data pertaining to the operation of computer systems and includes user-provided instructions and data that implement pre-programmed algorithm control systems; computer codes and data that will reside in firmware; and, when specified by the cognizant manager, user-provided instructions and data used by commercial computer software such as spreadsheet and database packages.

Configuration - The functional and/or physical characteristics of hardware, firmware, or software as delineated in technical documentation and achieved in a product (form, fit, and function).

Section 15.0 Glossary (continued)

Configuration Management - An integrated management program that establishes consistency among design requirements, physical configuration, and facility documentation, and maintains this consistency throughout the life of the facility as changes occur. The configuration management program consists of configuration management functions associated with the following program elements: program management, design requirements, document control, change control, and assessments. The configuration management program also includes design reconstitution and material condition and aging management as adjunct programs.

Design Authority - The organization responsible for establishing the design requirements and ensuring the design output documents appropriately and accurately reflect the design basis. The design authority is responsible for design control and ultimate technical adequacy of the engineering design process.

Design Basis - Consists of the design inputs, the design constraints, and the design analysis and calculations. It includes topical areas such as seismic qualification, fire protection, and safe shutdown. The design basis encompasses consideration of factors such as facility availability, facility efficiency, costs, and maintainability, and that subset that relates to safety and the authorization basis. The design basis explains why a design requirement has been specified in a particular manner or as a particular value.

Design Reconstitution - An adjunct program to the configuration management program that accomplishes the one-time effort of identifying, retrieving, extracting, evaluating, verifying, validating, and regenerating missing critical design requirements and basis. Design reconstitution encompasses the following functions: developing associated program plans and procedures; identifying and retrieving design information from identified source documents; evaluating, verifying, and validating the design information; resolving discrepancies; regenerating missing critical design information; and preparing and issuing Design Information Summaries.

Design Requirements - Those engineering requirements reflected in design output documents (such as drawings and specifications) that define the functions, capabilities, capacities, physical sizes and dimensions, limits and setpoints, etc., specified by design engineering for a structure, system, or component. The design requirements provide the results of the design process.

Section 15.0 Glossary (continued)

Design Review - An evaluation of structure, system, and component designs to ensure that requirements and considerations (both normal and emergency) of electrical, mechanical, thermal, hydraulic, safety, producibility, reliability, maintainability, quality, inspectability, interfaces, engineering standards, design, and fabrication practices are met for the intended application.

Document Control - A process that stores and controls, tracks status (especially during revisions), and retrieves documents.

Engineering Change Notice - A form used to document, approve, and control changes to engineering documents.

Engineering Document - Any text-type or pictorial information that describes, defines, specifies, reports, or certifies activities, requirements, procedures, or results of engineering activities and contains engineering and technical information that communicates concepts, plans, descriptions, criteria, requirements, standards, and instructions.

Engineering Drawing - A document that depicts by means of graphics, pictorial, and/or textual presentations the form, fit, and function requirements of item(s).

Functional Design Criteria - A formal document, normally prepared for DOE-controlled projects, that provides a summary description of new or modified structure, system, or component.

NOTE: Functional Design Criteria completely documents minimum concepts and requirements to form a basis and to provide limitations governing design for a complete, safe, and operable facility adequate for its intended use.

Graded Approach - A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are made commensurate with many considerations, including the relative importance to safety, safeguards, and security; the magnitude of any hazard involved; the life cycle stage of a facility; the programmatic mission of a facility; the particular characteristics of a facility; and any other relevant factor.

Life Extension - Actions specifically designed to reduce aging stresses or reduce the effects of aging stresses for facility potentially life-limiting components, as might be necessary to achieve the desired lifetime.

Section 15.0 Glossary (continued)

Material Condition & Aging Management - An adjunct program to the configuration management program that encompasses the functions of: developing associated program plans and procedures; screening components to determine those that are potentially life-limiting for the facility; evaluating, aging degradation mechanisms; estimating the facility remaining lifetime; evaluating feasibility of continued operations and extended operations; performing detailed material condition and aging analysis; and developing necessary life extension techniques to achieve the facility desired lifetime defined by DOE.

Physical Configuration - The actual physical location, arrangement, and material condition of structures, systems, and components within a facility.

Release - An activity that certifies by a stamp that the engineering document is the controlled version, approved for the intended use, entered in a database, and retrievable.

Structure, System, or Component Grade - A measure of the importance of structures, systems, and components (SSCs) within the facility, based on the most important design requirements applicable to the SSC, that can be used to determine priorities and proper levels of attention and resource allocations. Examples of SSC grades and associated priorities are: (1) safety, (2) environmental, (3) mission, and (4) others.

Supporting Documents. An engineering text document that describes, defines, reports, or certifies activities, requirements, procedures, or results of engineering activities that support the WHC onsite missions.

NOTE: Other technical work may use the SD system of identification, review, release, and change control.

Systems Engineering - The systematic approach used by management and engineering to transform technical goals into an optimized, integrated, operational, and physical system that achieves the mission. The iterative technical and management process applied throughout the system life cycle that produces and maintains a well-defined and documented system technical baseline.

Technical Baseline - The defined and approved physical/functional configuration (requirements and design description) of an SSC or computer software that is used as a reference for program planning purposes and as a point of departure for change control. The technical baseline plus approved changes, waivers, and deviations constitutes the current configuration.

Vendor Information - Any type of technical documentation/information submitted by a vendor as part of a procurement.