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

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7. Abstract

The Configuration Management Plan is based on the functional model established by DOE-STD-1073-93 and has been tailored specifically to address the technical relationship of requirements, physical configuration, and documentation during the full life cycle of the Waste Tank Farms and 242-A Evaporator facilities.

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CONFIGURATION MANAGEMENT PLAN

FOR

WASTE TANK FARMS AND THE 242-A EVAPORATOR

OF

TANK WASTE REMEDIATION SYSTEM

July 25, 1994

EXECUTIVE SUMMARY

The configuration management architecture presented this Configuration Management Plan is based on the functional model established by DOE-STD-1073-93, "Guide for Operational Configuration Management Program."

The DOE Standard defines the configuration management program by the five basic program elements of "program management," "design requirements," "document control," "change control," and "assessments," and the two adjunct recovery programs of "design reconstitution," and "material condition and aging management." The CM model of five elements and two adjunct programs strengthen the necessary technical and administrative control to establish and maintain a consistent technical relationship among the requirements, physical configuration, and documentation. Although the DOE Standard was originally developed for the operational phase of nuclear facilities, this plan has the flexibility to be adapted and applied to all life-cycle phases of both nuclear and non-nuclear facilities.

The configuration management criteria presented in this plan endorses the DOE Standard and has been tailored specifically to address the technical relationship of requirements, physical configuration, and documentation during the full life cycle of the Waste Tank Farms and 242-A Evaporator of Tank Waste Remediation System.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF ACRONYMS

BCSR	BCS 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
TF&E	Tank Farm and Evaporator
TWRS	Tank Waste Remediation System
USQ	unreviewed safety question
WBS	work breakdown structure
WHC	Westinghouse Hanford Company

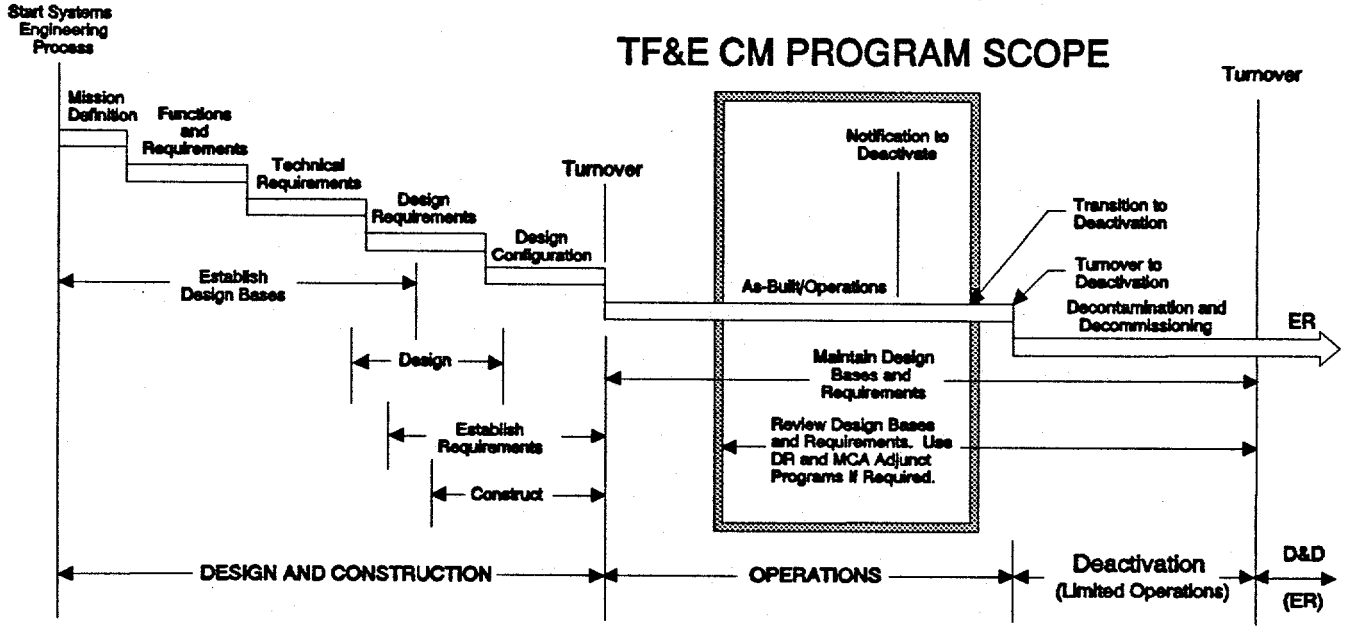
1.0 INTRODUCTION

This plan describes the configuration management program for Waste Tank Farms and 242-A Evaporator (TF&E) of Tank Waste Remediation System (TWRS), and defines the requirements and responsibilities for execution of the TWRS configuration management program. The TF&E Configuration Management Plan complies with the Westinghouse Hanford Company (WHC) configuration management requirements established in WHC-CM-1-3, Management Requirements and Procedures, MRP N.N, "Configuration Management" (Draft). The WHC configuration management program of WHC-CM-1-3 aligns with the criteria established in the DOE Standard, DOE-STD-1073-93, while complimenting the requirements of DOE 4700.1, DOE 5700.6C, RLIP 4700.1A, and RLID 5000.12.

1.1 PURPOSE

The configuration management plan (CMP) integrates technical and administrative controls to establish and maintain technical consistency among requirements, physical configuration, and documentation for TF&E facilities primarily during operations and maintenance phases of the TF&E life cycle (see Figure 1). This CMP assists in establishing and managing the technical baselines, and controls and statuses changes to those baselines to ensure that the structures, systems, and components (SSC) and computer software (hereafter the term SSC includes computer software) within configuration management meet design, performance, and operational requirements; are operated and tested in accordance with their design basis; and interface both physically and functionally. The technical relationships ensure existing facilities and new design modifications achieve safety, reliability, environmentally-sound and cost-effective operation, and total quality.

Figure 1. Configuration Management Program Life-Cycle



1.2 SCOPE

The TF&E CMP applies to the operational phase of SSCs within Waste Tank Farms and the 242-A evaporator of TWRS. The TF&E configuration management program is integrated with the engineering and administrative process of the TWRS Systems Engineering Management Plan (SEMP), design requirements of engineering practices, and the operational requirements of the work management and job control system. The configuration management program presented in this plan is comprised of the five basic elements of program management, design requirements, document control, change control, and assessments and the two adjunct programs of design reconstitution and material condition and aging management. The configuration management program illustrated in Figure 2 identifies the integrated process and relationships of the five element processes and two adjunct programs. The specific configuration management requirements for Construction Projects (design and construct phase) and for those transition projects that are identified for deactivation (facility transition from operations to Decontamination and Decommissioning (D&D)) are not addressed in this CMP. The development of a configuration management program for these phases need to be performed and coordinated with the scope of this CMP.

1.3 OBJECTIVES

This CMP describes the TF&E configuration management program for existing facilities and defines the requirements and responsibilities for execution of MRP N.N, "Configuration Management" (Draft). At a future date, the three CMPs may be combined into one full life-cycle CMP. Specific objectives for the TF&E configuration management program are:

1. Identification of SSCs required to represent TF&E.

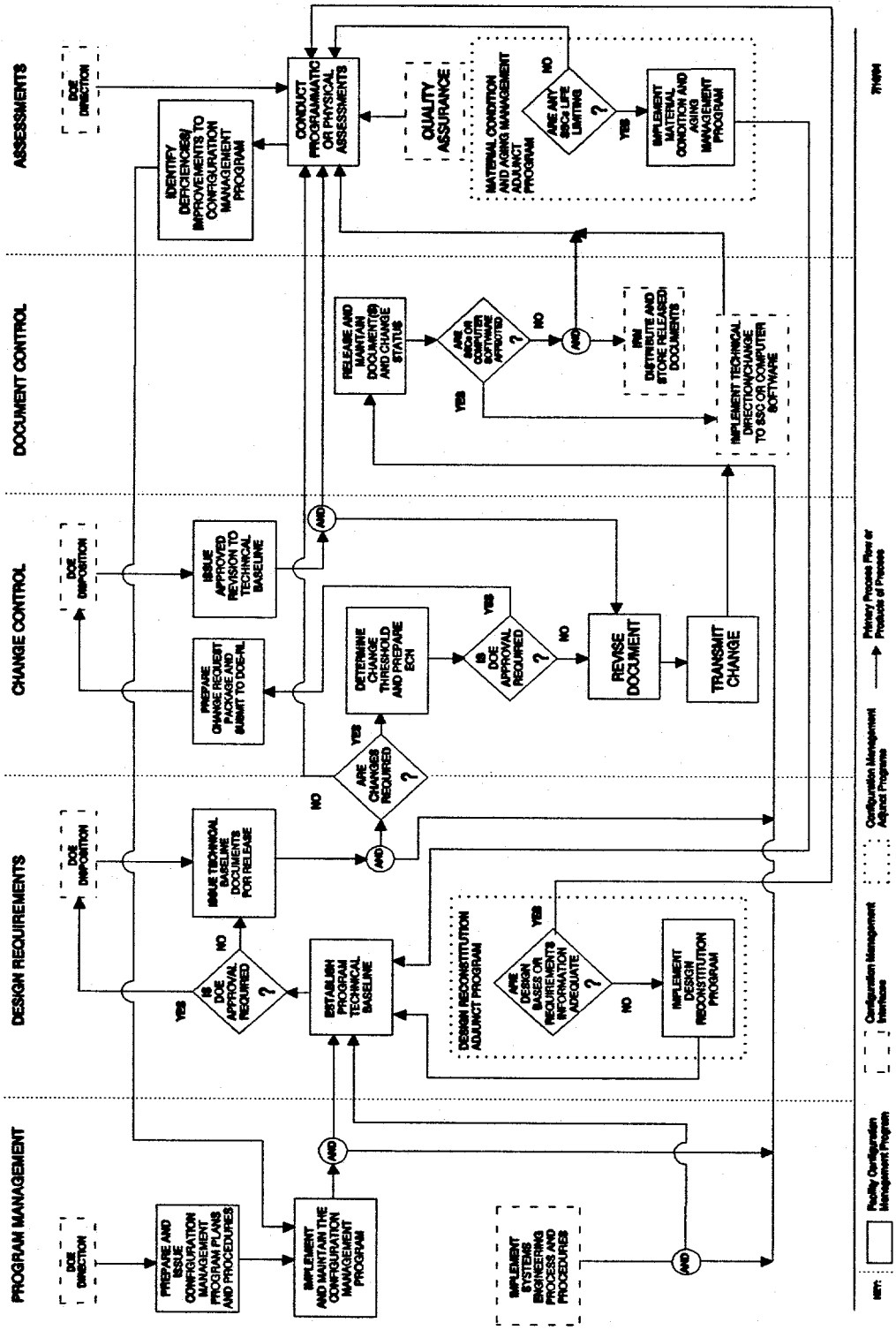
2. Establishment and maintenance of the requirements and associated documents to accurately reflect the SSCs.

3. Identification and maintenance of SSC-associated documents within the scope of the configuration management program.

4. Controlling and statusing changes to the SSCs that ensure the continued quality of the requirements, physical configuration, and documentation.

5. Conducting assessments to ensure that the configuration management program establishes and maintains the technical relationships.

Figure 2. Configuration Management Process



2.0 ROLES AND RESPONSIBILITIES

Organizational roles and responsibilities are established to ensure that functional organizations are aware of their roles and responsibilities required for implementation of the configuration management program. This section of the CMP identifies general organizational roles and responsibilities. Specific configuration management activity responsibilities are defined in Appendix A.

2.1 U.S. DEPARTMENT OF ENERGY

2.1.1 U.S. Department of Energy, Headquarters

The U.S. Department of Energy, Headquarters (DOE-HQ) provides the overall guidance to:

1. Develop, promote, and maintain the guidance document, DOE Standard DOE-STD-1073-93, to implement relevant policies, procedures, and training related to configuration management.

2. Assist the U.S. Department of Energy, Richland Operations Office (RL) in the selection and application of existing (and development of any new) criteria, codes, standards, and program requirements associated with configuration management.

3. Provide guidance and technical assistance to RL, as required, to implement an integrated configuration management program.

2.1.2 U.S. Department of Energy, Richland Operations Office

RL has the authority and responsibility to formulate and evaluate the execution of the configuration management program. RL will:

1. Establish an integrated configuration management policy directive for Hanford.

2. Provide configuration management requirements applicable to activities performed by Hanford participants.

3. Ensure implementation of the configuration management program.

4. Conduct or authorize periodic assessments and inspections to determine the degree of compliance and to identify any needed adjustments to the TF&E configuration management program.

5. Establish requirements and procedures for processing and dispositioning programmatic change requests.

2.2 MANAGEMENT AND OPERATING CONTRACTOR

As the management and operating (M&O) contractor, WHC establishes and manages the configuration management program by developing and establishing requirements and appropriate implementing procedures that address configuration management responsibilities and process methodologies. WHC will:

1. Develop and manage the WHC integrated configuration management program for facilities managed by WHC.

2. Manage the coordination and interfaces of the TF&E configuration management program elements, between WHC criteria standards, other WHC-managed facilities/projects, or offsite Hanford that affects the TF&E configuration management program.

2.2.1 Engineering, Analysis and Technology Department of Waste, Analytical and Environmental Services

Engineering, Analysis and Technology develops the WHC configuration management program criteria that provides a consistent and graded approach for all WHC-managed programs, projects, facilities, and subcontractor activities. The Configuration Management function of Engineering, Analysis and Technology will:

1. Develop the WHC standard configuration management program criteria.

2. Ensure new or revised DOE configuration management requirements are appropriately integrated within the WHC standard configuration management program.

3. Assist in the development of configuration management plans and associated documentation for WHC programs, projects, facilities, or special applications.

4. Ensure that the recording and reporting status for technical documents and associated changes are adequately addressed and maintained in appropriate procedures and databases.

5. Conduct or participate in the conduct of configuration management assessments.

2.2.2 Systems Engineering

Systems Engineering; as part of Waste, Analytical, and Environmental Services; provides a standard engineering process that supports a consistent approach for program, project, and facility activities. Systems Engineering will:

1. Assist in defining the various system needs to be supported by the TF&E configuration management program.

2. Define, integrate, and manage the engineering process for TF&E in accordance with the TWRS SEMP.

2.2.3 BCS Richland (BCSR)

BCSR will:

1. Establish and manage document processing, distribution, record storage, retrieval, and microfilming.

2. Provide vault storage for documentation and computer software media.

2.2.4 Quality Assurance

Quality Assurance is responsible for site quality issues and will:

1. Develop audit plans, checklists, and assessment criteria and conduct periodic assessments of configuration management requirements and their implementation.

2. Verify that procedures related to configuration management are implemented in accordance with WHC requirements and procedures.

3. Participate in the configuration management process of change control and design verification via inspections, audits, and surveillances.

2.2.5 Tank Waste Remediation System

TWRS, via the Executive Vice President and Manager of TWRS, will:

1. Manage and control the overall configuration management program for TWRS programs, projects, facilities, and special applications.

2. Ensure that the configuration management program remains effective in establishing and maintaining the basic technical relationships.

3. Establish and identify the Design Authority, Design Agent, and Facility Manager.

2.2.5.1 TWRS Plant. The TWRS Plant organization, is the Design Authority and Facility Manager, and will:

1. Implement and manage the configuration management program in accordance with this CMP.

2. Control the evolving technical baseline using approved implementing procedures and databases.

3. Ensure that complete, accurate, and valid technical documentation (drawings, text documents, and vendor information) is developed, approved, released, and maintained and is retrievable.

4. Ensure that change control procedures are used to maintain technical consistency between the requirements, the physical configuration, and the documentation.

5. Develop implementing procedures that address configuration management responsibilities and process methodology.

6. Control the retirement of SSCs.

7. Assess the adequacy of specific configuration management functions and measure how effective the configuration management process is in establishing and maintaining the basic technical relationships.

2.2.5.2 Waste Tank Plant Engineering. Waste Tank Plant Engineering will:

1. Ensure appropriate approvals and reviews are obtained for original designs and subsequent changes.

2. Assist in the development and maintenance of the approved technical baseline of the TF&E.

3. Identify and manage technical boundaries and interface characteristics.

2.2.5.3 Waste Tank Maintenance. Waste Tank Maintenance ensures that:

1. The maintenance program is performed in accordance with the work management and job control system.

2. Maintains the technical relationship between the SSC and the associated documentation by ensuring that required changes are documented and approved prior to implementation.

3. Required vendor information, necessary for safe and technically accurate maintenance of SSCs, are identified, obtained, and formally released.

2.2.5.4 Tank Farm Operations. Tank Farm Operations ensures configuration management controls are used in the conduct of operations.

2.2.5.5 Business Management. Business Management develops and maintains cost and schedule baselines through the Baseline Development and Management Systems organizations and processing programmatic cost, schedule, and technical changes that affect established baselines.

2.2.5.6 TWRS Engineering. TWRS engineering, when acting as the Design Agent, will:

1. Provide design engineering services for TWRS and support programs (upgrades, safety, characterizations, etc.).

2. Provide technical integration and direction for technology development.

3. Provide technical management and design support for assessments, modifications and upgrades of TWRS storage, and treatment and transfer of equipment and systems to ensure safe, compliant, cost effective facility operations.

4. Provide support as requested for developing and maintaining the TF&E configuration management plan, material condition and aging management program plan, and design reconstitution program plan.

2.2.5.7 Strategic Planning and Systems Engineering. Strategic Planning and Systems Engineering will:

1. Develop or assist in the development and maintain technical baselines.

2. Develop or assist in the development of interface control documents.

3. Develop or assist in the development of procedures to assist the engineering process.

4. Provide engineering direction and oversight to ensure designs and modifications to designs are consistent with the previous technical baselines (functions and requirements, technical requirements, and design requirements).

2.2.5.8 TWRS Program Office. TWRS Program Office coordinates, assists, and maintains the project management control system and allocates funding based on program priorities to support the configuration management program.

3.0 PROGRAM MANAGEMENT

The program management element directs and monitors the development and implementation of the overall configuration management program. In addition, it establishes the criteria for the SSCs to be included in the configuration management program, defines configuration management baselines and concepts and terminology, identifies and controls configuration management organizational and programmatic interfaces, establishes the policy and criteria for required databases, and develops and maintains configuration management procedures.

3.1 PROGRAM PLANNING

The configuration management program is a phased approach for implementation involving approximately 7 years to initiate the program planning, develop the CMP (see Figure 3 for the configuration management plan hierarchy), and execute the CMP. Program planning sets the direction, definition, and graded approach for future development and implementation activities. This approach will consider existing programs and procedures, assessment of the existing programs, and procedures to determine any weaknesses and provide a strategy for corrective measures to align with the configuration management program elements. The major steps (phases) are described below:

Phase 1 - Develop the CMP that will provide a road map for integrating, assessing, and improving existing configuration management functions. This development aspect will also address the development of the adjunct programs of design reconstitution and/or material condition and aging management.

Phase 2 - Develop specific action plan(s) and procedures to implement the configuration management program identified in Phase 1.

Phase 3 - Execute the CMP in accordance with the approved action plan. Schedules, budgets, and productivity will be monitored to ensure the configuration management program is carried out as planned and budgeted.

Phase 4 - Perform assessments (post implementation) on the configuration management program.

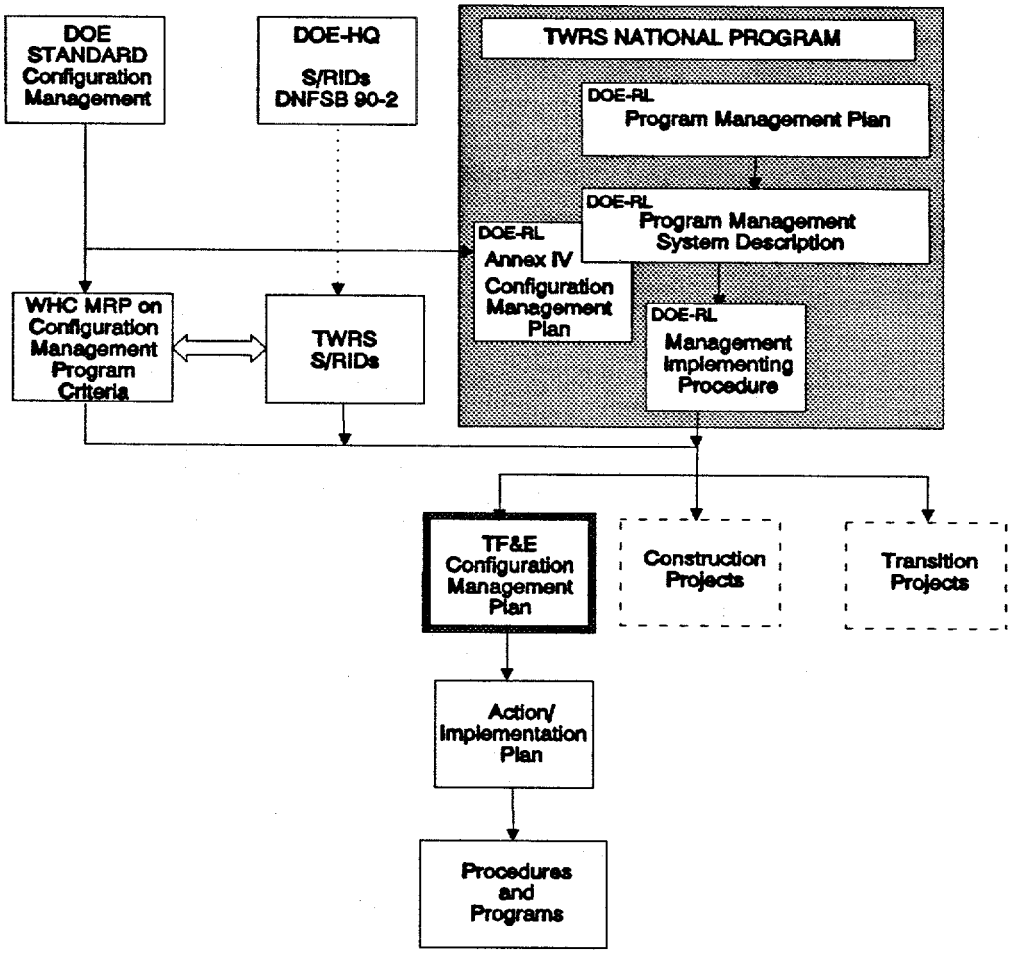
A parametric cost model will be used to aid in determining the costs associated with Phase 1. The estimate for this phase, based on this model, should be available by the third quarter of FY95. The cost for the remaining program will be estimated as a part of the Phase 1 activities.

3.2 WORK BREAKDOWN STRUCTURE

A work breakdown structure (WBS) is a product- or task-oriented hierarchical relationship composed of hardware, software, services, and data that completely defines the scope of the TF&E product or task. The WBS displays and defines the product(s) or task(s) to be developed and/or produced and relates elements of work to be accomplished to the end product. The WBS establishes a logical indentured framework for correlating schedule, cost, technical performance, and technical interfaces. The TF&E WBS is prepared and controlled in accordance with WHC-CM-2-5,

Management Control System. All products (documents, SSCs, and data) should be traceable to the WBS that authorized their development.

Figure 3. Configuration Management Plan Hierarchy



3.3 BASELINE MANAGEMENT

All projects must define the specific tasks to be performed, provide a schedule for accomplishing the tasks, and identify the resources required to produce acceptable end products. Baseline management combines work scope, schedule, and budget information into a single overall program plan. This planning forms the basis of the cost and schedule baselines and, when combined with technical requirements, establish the project baseline. By interrelating the three sets of requirements, the established baselines (cost, schedule and technical) remain interdependent throughout operations.

3.3.1 Cost and Schedule Baseline

Although configuration management is primarily concerned with the technical baseline, configuration management does address cost and schedule issues insofar as changes to the cost and

schedule baseline result or derive from approved technical baseline changes. The integration of the cost and schedule baseline with the technical baseline ensures the control and integrity of the overall project baseline is maintained, thus providing further assurance that valid data are available to accurately assess the cost and schedule impacts that may be associated with proposed changes to the technical baseline.

3.3.2 Mission Definition

Systems engineering will use an iterative process (see the TWRS SEMP for a detailed description of the process and its products) to develop a TF&E mission definition that determines the desired end conditions for the TF&E and establishes the functions necessary to achieve the end conditions. Systems engineering will interface with configuration management to ensure that the products of the process are properly identified, maintained, communicated, and controlled. The mission definition provides the following minimum information:

1. Statement and description of the TF&E Program mission (title and description of the TF&E function on completion of the TWRS functional analysis)

2. The scope and boundary of the TF&E Program including the description of the interfaces to other systems both within TWRS and external to TWRS

3. Listing of imposed external constraints (fixed policy, legislation, regulations, and DOE directives) that provide the source of external requirements for subsequent requirements analysis and allocation to TF&E.

4. TF&E Program technical objectives and values that will be the basis for decision criteria to select from alternative function solutions and the system architecture

5. The key system-level performance requirements and measures of effectiveness to identify and measure how well the system end-state must perform

6. System-level enabling assumptions and associated risks. These assumptions will be carried into the functional analysis and identified and tracked from identification through resolution

Upon completion, documentation, and release of the mission definition, the initial version of the technical baseline is developed and released.

3.3.3 Technical Baseline.

A technical baseline is that body of technical information associated with a system under development, operation, modification, or deactivation. It contains all technical requirements for the following: (1) waste characterization, (2) system and design specifications, (3) design configuration, (4) operations and maintenance, and (5) deactivation. This baseline is the reference set of technical data and is controlled using configuration management as described in this plan. All documents in the baseline related to SSCs will be prepared in accordance with the applicable procedures. As development of the baseline evolves, required documentation will be developed or changed and controlled throughout the program or project life cycle using configuration management procedures.

Each baseline contains the appropriate level of evolving technical documentation (functions and requirements documentation based on the maturity of the system. The technical baseline provides a controlled frame of reference to progressively expand the system definition and design and is available to all TF&E participants. The development (specific documents, data, and information) and maintenance of the TF&E technical baseline is defined and governed by the SEMP. The various baseline evolutions are briefly described as follows:

1. Functions and Requirements Baseline. This baseline begins with the development of the functions and requirements document. From the mission objectives, the functional requirements provide the necessary basis for development of system-level requirements. A requirements database is established (may be included as a part of the equipment list database) and maintained throughout the program or project life cycle. Requirements traceability will be maintained through the requirements database. After approval and subsequent implementation of the systems requirements documents, the technical baseline will continue to evolve.

2. Technical Requirements Baseline. This baseline supports the conceptual design. At this point, the technical baseline represents the technical approach chosen to accomplish the program mission and it provides the technical basis for proceeding with the conceptual design.

3. Design Requirements Baseline. This baseline is established when the conceptual design is completed. At this point, the baseline provides the technical data for the start of the preliminary design (Title I). This baseline expands on functional and design requirements allocated to each project, delineates more detailed requirements, and adds constraints that reflect design architecture decisions.

4. Design Configuration Baseline. This baseline is established when the preliminary design (Title I) is completed. At this point, the technical baseline provides the start for detailed design (Title II).

   The design configuration baseline includes updates to the requirements document, baseline system description, and functional design criteria and replaces the preliminary design packages for each project with more detailed final design packages. At this point, the technical baseline refines requirements that reflect final design decisions. The final design will provide the details of the design necessary for fabrication, assembly, construction, installation, and testing of SSCs.

5. As-Built Configuration and Operational Baseline. This baseline documents the completion of turnover to operations and represents the physical configuration that is being controlled by this CMP. It replaces the final design packages with the construction, test, and turnover package and operations and maintenance packages that document the actual configuration of each project. It is the technical basis for continued operations, maintenance, and upgrades. The technical baseline during this phase will be updated throughout the operational life of the system to reflect the actual TF&E operational configuration. During the operational phase, specific information should be collected, categorized, and retained to support the generation of the Transition Project's turnover package to D&D. Examples of this information are:

- SSC/facility historical information.
- Appropriate safety analyses documents and plant emergency procedures.
- List of operational equipment.
- Records of crane load certification tests and preventive maintenance records.
- Descriptions of inaccessible areas and why.
- Identification of all hazardous material that is in the facility.
- Radiological and toxicological status surveys.
- Documents that show hazardous material has been removed from the facility.
- A record of blanks that were installed and remain after facility turnover to transition projects.

6. Decontamination and Decommissioning Baseline. This baseline documents the configuration at the beginning of facility deactivation after normal facility operations have ended. It begins from the as-built and operational configuration, all approved non-work-related changes, and all implemented (work-completed) changes and ends with facility turnover to transition projects.

3.4 EQUIPMENT SCOPE CRITERIA

The SSCs that are in the TF&E configuration management program will be identified in WHC-SD-WM-CM-005, "List of Structures and Systems for the Tank Farm & Evaporator Configuration Management Program." At a minimum, the compilation of this SSC list will use the following to derive and maintain the SSC scope:

- Single Shell Tank Safety Analysis Reports
- Double Shell Tank Safety Analysis Reports
- Aging Waste Facility Safety Analysis Reports
- 242-A Evaporator Safety Analysis Reports
- Single Shell Tank Interim Safety Equipment List
- Double Shell Tank Interim Safety Equipment List
- Aging Waste Facility Interim Safety Equipment List
- 242-A Evaporator Safety Equipment List
- Tank Farm Facility Boundary Evaluation List
- Various H-2 Essential Drawings
- Waste Tank Labeling Procedure
- Tank Farm Cognizant Engineer Responsibilities.
- Results of Operational Readiness Reviews

3.5 CONCEPTS AND TERMINOLOGY

Configuration management concepts and terminology are established and maintained within the MRP on configuration management. Unique concepts, terms, and associated definitions to support the TF&E activities are established in the glossary of this plan.

3.6 INTERFACES

Organizational and technical interfaces, necessary for the success of the TF&E configuration management program, are identified, established, and controlled. Appropriate program and

organization interfaces are presented in the elements of the configuration management program and the roles and responsibilities, respectively, of this plan. Details regarding the establishment of technical interfaces are described in Section 4.3.4 of this plan.

3.7 DATABASES

Databases used in support of the TWRS configuration management program should identify equipment lists, computer software, documents, design bases, design requirements, and change request status to identify, store, control, status, and retrieve information.

1. The engineering release system database (ERSDB) tracks the status of released engineering documents and the subsequent changes to those engineering documents.

2. An interface database, developed and controlled by TWRS Systems Engineering, will provide the following information:

    a. Interface identification number
    b. Title of the interface
    c. Organizations involved in the interface agreement
    d. Status of interface approvals.

3. The master equipment list, consistent with the SSC scope, is developed and maintained by the Design Authority.

4. TWRS Systems Engineering will establish and maintain a database that tracks TWRS functions and requirements.

5. Automatic data processing of the job control system provides support for TF&E facility maintenance and modifications.

3.8 PROCEDURES

The procedures, identified in this CMP, provide the details and process flows that implement the criteria of this plan. Procedures that apply to all participating contractors are necessary to address the configuration management functions of program management, design requirements, document control, change control, and assessments.

A phased and graded implementation plan is necessary for the successful execution of the configuration management program. This implementation plan will be developed based on the initial assessments, audits, S/RIDs, and existing WHC procedures that are identified and cross referenced in WHC-SD-WM-CM-007, "Configuration Management Compliance Matrix."

3.9 CONFIGURATION MANAGEMENT TRAINING

As procedures and related configuration management processes are established, associated training will be required to communicate objectives and expectations and to ensure effective implementation. The configuration management program training should include several levels of

information on configuration management concepts, roles and responsibilities, terminology, and implementing procedures. These training levels should include:

1. Initial awareness overview training

2. Follow-up training on functional and organizational implementation

3. Refresher training, as needed, for maintaining implementation review and change practices.

3.10 VENDOR AND CONTRACTOR CONTROL

Vendor and contractor control ensures that important activities and information to support the TF&E configuration management program are reviewed and approved. The Design Authority will review and approve all vendor and contractor configuration management programs, procedures, or practices before work begins or impose the use of WHC configuration management procedures for the conduct of vendor and contractor work at the TF&E facilities.

Vendor and contractor control requirements include the following:

- Vendors and contractors have adequate controls over the products, data, design, and information that is to be used by TF&E.

- The as-built configuration agrees with all documentation (drawings and text) including approved waivers, deviations, and unincorporated changes.

- All approved changes are incorporated at final turnover.

- Construction drawings and documents are written in a format that is compatible with the TF&E document control system and the ERSDB.

- Pertinent vendor technical information (manuals and notices) are identified, collected, and entered into the WHC document control system.

4.0 DESIGN REQUIREMENTS

The design requirements element establishes and maintains the technical documents and associated design basis and the products (SSCs) generated from these documents. In addition, it identifies and controls system and process boundaries, assigns SSCs grades, and identifies SSCs for inclusion in the TF&E CMP.

4.1 DESIGN PROCESS

The design process is the technical and management process that begins with the identification of design inputs and constraints, processes this information, and results in the issuance of requirements. For each design, the design process: (1) defines and documents the design inputs; (2) identifies and adheres to the design constraints; (3) performs and documents the analyses, calculations, and technical evaluations; and (4) ensures that the design outputs are complete and accurately documented.

Information generated from or used in the design process consists of two fundamental types: design basis information (which consists of design inputs, design constraints, and design analysis and calculations) and requirements information (which consists of design outputs). In simple terms, the requirements specify what is required and the design basis explains why it is required.

The TF&E SSCs are reflected in the design output requirements and not the design basis. Each design output requirement is generated from a design basis. Changes to the requirements must be supported by the design basis, either as it existed or as modified. The operating, maintenance, testing, and other non-design organizations need to know at least the requirements. The design organization needs to control both the output requirements and their basis. The total set of requirements and design basis is referred to as the design information.

4.2 ESTABLISHMENT OF DESIGN BASIS

Design basis is composed of three principle types and is described as follows:

1. Design Inputs - Those specific criteria, limits, bases, or other initial requirements (such as specific functional requirements, specific codes and standards, and specific regulatory commitments) on which the detailed final design is based.

2. Design Constraints - Those general restrictions and limits to the engineering design process that ensure consistency and quality of designs (such as general codes and standards, general regulatory commitments, quality assurance requirements, engineering procedures and good practices, and required design methodologies).

3. Design Analysis and Calculations - Those intermediate design products that are necessary to convert the design inputs and constraints into appropriate and complete design outputs. Design analysis and calculations consist of a wide variety of engineering analyses, calculations, studies, reports, and technical review checklists necessary to perform complete engineering design.

The design bases are formally established, documented, maintained, and correlated with the requirements.

1. A technical management review is performed to determine the adequacy of the design basis for existing SSCs. If the design basis is not fully documented, not accurate, or missing, the design basis is reconstituted through the design reconstitution program (Section 9.1).

2. The design bases for modified requirements are established and documented as they are developed.

4.2.1 Documentation of Design Basis

Design basis information is identified in supporting documents and are prepared, released, and revised in accordance with WHC-CM-6-1, EP-1.12, "Supporting Document Requirements."

4.2.2 Document Approvals

Supporting documents are approved in accordance with the requirements established in WHC-CM-6-1, EP-1.7, "Engineering Document Approval and Release Requirements." Minimum approvals for documents important to the environment, safety, or quality are approved in accordance with WHC-CM-3-5, Section 12.7, "Approval of Environmental, Safety, and Quality Documents."

4.3 ESTABLISHMENT OF REQUIREMENTS

Requirements, reflected in the design outputs (drawings, specifications, supporting documents, etc.) or the "as-designed or as-operated conditions," are the documented products of the design process that specify the design requirements for the TF&E SSCs.

1. The design outputs are the composite result of the engineering organization's consideration of the design inputs, design constraints, and design analysis and calculations.

2. Design outputs specify the functions; capabilities; capacities; physical dimensions; limits and setpoints (such as valve, switch, and relay positions); etc., that are necessary and supported by the design basis.

3. Design outputs include the functional requirements, as well as procurement requirements, quality assurance actions, construction installation specifications and instructions, post-installation testing, post-maintenance testing, and periodic surveillance/testing requirements.

4. The design output documents provide the design requirements that dictate the physical configuration of the project. This includes configuration information such as waste tank content characterization data.

5. Supplemental information such as "lock-and-tag" information is used to assist in defining the day-to-day configuration of a facility.

The requirements are formally established, documented, and maintained. When requirements exist, a technical management review should be performed to determine if the requirements are adequate. If the requirements are not fully documented, not accurate, or missing, then the requirements are reconstituted through the design reconstitution program (see Section 9.1. of this plan).

The source of requirements should be included in the equipment database which correlates the requirements with the SSCs involved, the SSC grade, technical topics involved, and associated design and configuration management documentation.

The requirements for new projects and modifications to existing facilities are established, categorized, and documented as they are developed.

4.3.1 Graded Approach

The graded approach (defined in Appendix B) is used to identify and rank facility SSCs and to determine the type and amount of documentation that is required to define an SSC and ensure adequate controls exist. In addition, the graded approach is used to determine the appropriate level of attention and resources that will be required to define and maintain an SSC during its life cycle.

4.3.2 Specific Equipment List

The specific equipment list, usually in the form of a database, identifies the specific SSCs that will be included in the configuration management program. The equipment list can be either a master equipment list or an SSC hierarchy.

1. Master Equipment List (MEL). A master equipment list is used to identify the facility SSCs. The MEL will provide the following information:

   a. Structures and systems that are in the TF&E configuration management program.

   b. Components that make up the system.

   c. Grade of each system and component.

   d. Appropriate requirements and design basis documents for each SSC.

2. SSC Hierarchy. To assist in the identification and control of SSCs and documents, an SSC hierarchy should be developed that shows the relationship of SSCs to each other and identifies those documents that are currently available and associated with each SSC. If used, the hierarchy is maintained to indicate the current status of the facility, and it will become a part of the D&D turnover package.

4.3.3 Documentation of Requirements

Requirements are reflected in the five major categories of engineering documents: drawings, specifications, vendor information, supporting documents, and selected types of environmental engineering documentation.

All configuration management documents have unique identification numbers to facilitate document retrieval, statusing, change development, and linkages to other documents and SSCs.

1. Drawings. All TF&E drawings are prepared and released in accordance with the requirements of WHC-CM-6-1, EP-1.3 "Engineering Drawing Requirements."

   Each SSC item (e.g., assembly, subassembly, component, and detail part) that is fabricated, assembled, installed, and/or procured will be identified by one part number that is the drawing number or dash number of the drawing where captive details are reflected on an assembly, installation, or other construction drawing on which the item is defined. General requirements for hardware/equipment identification selection will be in accordance with Hanford Plant Standard, SDC-1.3. Part numbers are assigned to identify a specific item in accordance with WHC-CM-6-1, EP-1.3.

2. Specifications. Single-use and multi-use specifications are prepared and released in accordance with WHC-CM-6-1, EP-1.2, "Engineering Specifications Requirements."

3. Vendor Information. Vendor information is collected, identified, and controlled in accordance with WHC-CM-6-1, EP-3.3, "Vendor Information Requirements."

4. Supporting documents. Supporting documents are prepared and released in accordance with WHC-CM-6-1, EP-1.12, "Supporting Document Requirements."

5. Environmental Engineering Documentation. Environmental engineering documentation is prepared in accordance with WHC-CM-3-6, Uniform Publications System and released in accordance with WHC-CM-6-1, EP-1.6, "Engineering Data Transmittal Requirements," and EP-1.7.

4.3.4 Document Approvals

Supporting documents are approved in accordance with the requirements established in WHC-CM-6-1, EP-1.7, "Engineering Document Approval and Release Requirements." Minimum approvals for documents important to the environment, safety, or quality are approved in accordance with WHC-CM-3-5, Section 12.7, "Approval of Environmental, Safety, and Quality Documents."

4.3.5 System and Process Boundaries

System and process boundaries are established to contain those SSCs that are necessary for facility operations. The WHC interface control documentation is established in accordance with WHC-CM-6-1, EP-1.5, "Interface Control Requirements."

1. Construction Projects. An interface coordinator or interface control group [i.e., Interface Control Working Group (ICWG), see item 3 below] should be used to identify, establish, document, and control all physical and functional interfaces of SSCs.

   a. All interface boundaries are documented and formally controlled as soon as they are developed and approved.

   b. Interface control documents and their related changes are processed in accordance with WHC-CM-6-1, EP-1.5.

2. Existing Facilities. An interface coordinator or interface control group is used to identify, establish, document, and control all physical and functional interfaces within the configuration management program.

   a. The chairman of the control group the facility manager or designated alternate.

   b. All interfaces are documented and formally controlled as soon as they are developed and approved.

   c. Procedures are developed to process interface control documents and their related changes.

   d. A graded approach is used to ensure that the level of interface control is consistent with the requirements and needs of the facility.

   e. A graded approach is used for any reconstitution effort that is conducted to establish interface control information.

3. Interface Control Working Group and Interface Development. The ICWG, usually established by Systems Engineering, identifies, establishes, negotiates, and documents physical and functional interfaces. The identification of interfaces are initiated by Systems Engineering. Once identified, the details defining the interfaces are developed, negotiated, and agreed to by the affected organizations. The interface information is formally documented (drawing or text-type document) and formally controlled. Once documented, changes to the interfaces are made in accordance with Section 6.0 of this plan. The process of creating functional and physical interfaces will be defined in a future Systems Engineering procedure.

5.0 DOCUMENT CONTROL

Document control identifies and maintains documents within the configuration management program consistent with the physical configuration and design requirements. This is accomplished by identifying the types of documents and specific documents to be included in the configuration management program, storing these documents, controlling and tracking these documents, and retrieving them in a timely manner.

5.1 IDENTIFICATION OF DOCUMENTS

Document types included in the TF&E configuration management program are identified in accordance with WHC-CM-6-1, EP-1.1 "Engineering Document Identification Requirements." Document types include design drawings, engineering procedures, specifications, system requirements, processes, safety analysis reports, operation and maintenance procedures or manuals, system descriptions, as-built drawings, equipment or component lists, analysis and calculation reports, systems engineering documents, and vendor information.

1. TF&E determines the types of documents that will be included in the configuration management program based upon this CMP.

2. A graded approach (see Appendix B) identifies the document types and the specific documents that are required for each SSC that is controlled by the configuration management program.

3. Each type of document will have identified document owners.

4. Document owners will verify the technical content of assigned documents.

5. Each document is identified in accordance with WHC-CM-6-1, EP-1.1. All configuration management documents have unique identification numbers facilitate document retrieval, statusing, change development, and linkages to other documents and SSC.

5.2 STORAGE

Responsibility for document archival storage, permanent storage for one-of-a-kind records, and access control are established, and original or master copies of configuration management documents are stored and protected.

1. Document archival storage, permanent storage for one-of-a-kind records, access control, and microfilming of record documents is assigned to BCSR and documented in WHC-CM-3-5, Document Control and Records Management Manual.

2. Originals and copies of identified documents (including approved changes) are stored, protected, and readily available to creators and users of the document at the point of application. The locations for storage are:

Table 1. Document Source/Location

DOCUMENT SOURCE	LOCATION	TYPE
Configuration Documentation Work Station (CDWS)	See HLAN, Hanford Info for Location	Active Drawings & ECN's & Search capacity for Engineering Documents by Key Word/Building/Number/etc.
CDWS (History)	MO-47/200E/131 VISIT (Do Not Phone)	Same as above, but Only Center with ALL Drawings, Revisions, and Some Vendor Files
Construction Project Files	2750E/200E/D-176 373-3834	Active Projects in work - Provide Project No. to get Box No. at 712
Vault Service (Vendor Info Files)	3707D/300/6 376-6411	All vendor information files & History Drawing's for Site
Central Files	3706/300/210 376-5421	Copies of Engineering Documents
Records Searches WHC	712/700 376-6584	Older Documents/Projects, will need box number if in Seattle

3. Retention times are established to meet the needs of the document owners and users (see WHC-CM-3-5, Section 4). All documents are retained until turnover to D&D as part of the deactivation turnover package. After turnover, retention requirements are specified by the D&D organizations performing the appropriate subsequent activities.

5.3 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 change request or ECN is maintained, and all released changes are tracked to work completion.

1. TF&E uses the WHC Configuration Documentation Work Station (CDWS) for release, statusing of documents, and related changes, required to control the accurate representation of a facility's configuration. The requirements for use of this system are specified in WHC-CM-6-1, EP-1.7.

2. Only the current version of a document and related outstanding ECNs, of identified documents are used.

3. Documents listed in the ERSDB can identify documents related to (1) particular SSCs; (2) types of SSCs; (3) technical topics; and (4) other relational information as may be necessary.

5.4 RETRIEVAL

The responsibility for document retrieval and the document retrieval frequency is established.

1. Documents are retrieved in a timely manner upon request.

2. Identified documents are retrievable from the CDWS or BCSR.

3. The required retrieval times for each document is based upon the priorities established by the document owners and users.

4. When a copy of a document is issued, the document includes the identification of pending changes and the references to detailed information regarding such changes.

6.0 CHANGE CONTROL

Change control maintains consistency between the requirements, the physical configuration, and technical documents. For adequate control, each change is identified, technically reviewed, approved (or disapproved or deferred), and documented so that the configuration is maintained. Change control for TF&E is the systematic evaluation and coordination process of maintaining the previously established technical, cost, and schedule baselines and identifying and controlling all changes to these baselines.

6.1 CHANGE MECHANISMS

Each facility should identify and document the mechanisms that can lead to permanent or temporary changes to SSCs and/or technical documentation. The identification of change mechanisms aids in indicating when a change to an SSC is in fact a change in the configuration and, as such, requires documentation of the change to ensure the change is defined, reviewed, and approved before implementation.

6.2 IDENTIFICATION OF CHANGES

All permanent or temporary changes to the requirements, physical configuration, or documentation within the TF&E configuration management program are identified and documented. The initiator of a change provides enough information with the change package to permit the approval authorities to adequately review the change proposal. This information includes, but is not limited to the following:

1. A complete, clear, and accurate description of the change.

2. A clear and accurate discussion of why the change is required.

3. Due dates (when the change must be implemented)

4. Constraints (if there any limits to what can be done during change implementation).

5. Alternatives to what is proposed.

6. A description of the impact:

    - If the change is not implemented or is not implemented by the due date.

    - A description of the impact if the change is implemented by the due date (what are the benefits).

7. Source material that requires or requests a change is identified or included as part of the change package. Types of source material may include failure reports;

nonconformance reports; software problem reports; customer, procurement, maintenance, operations, or engineering correspondence; and others.

8. Results of analysis or calculations to support the change.

9. Acceptance criteria after change implementation.

6.3 CHANGE PROCESSING PROCEDURES

Two major change control processes presently exists for WHC to address programmatic and technical changes.

6.3.1 Programmatic Changes

A programmatic change is any change against cost, schedule, and technical baselines that requires approval outside of TWRS (either the WHC or RL). These programmatic changes are processed in accordance with:

1. WHC-CM-2-5, Management Control System, Section 2.3, "Baseline Management" and Section 4.1, "Change Control"

2. WHC-CM-6-2, Project Management, PM-14 "Project Baseline Management and Change Control."

6.3.2 Technical Changes

Technical changes are limited to the TF&E review and disposition process.

1. Changes to technical documents are made in accordance with WHC-CM-6-1, EP-2.2, "Engineering Document Change Control Requirements."

2. Changes to computer software are made in accordance with Section 8.1 of this plan.

3. If a change involves an Unreviewed Safety Question (USQ) or potential USQ, the USQ is processed in accordance with WHC-CM-1-3, MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions" and facility-specific USQ implementation procedures.

6.4 TECHNICAL CHANGE REVIEWS

All ECNs are evaluated to:

1. Determine the technical validity of the change.

2. Identify all affected SSCs and associated documentation.

3. Determine the appropriate post-implementation acceptance criteria.

4. Identify the impact to other projects or services not associated with the original change proposal.

5. Determine the impact on the technical, cost, and schedule baselines and other documents that are in the configuration management program.

6. Ensure that mission objectives will be met or that the change will not interfere with the accomplishment of the mission.

6.5 MANAGEMENT CHANGE REVIEWS

Before the implementation of a technically approved change, management should review the proposed change (including those that involve a change to cost and schedule baselines) to verify 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. In addition, the review should consider:

1. Is the change necessary?

2. Do the benefits of the change warrant the cost and schedule impacts resulting from the implementation of the change?

3. Are adequate resources available?

4. Should management approval be based on criteria other than the above or the criteria used for technical review?

6.6 IMPLEMENTATION OF CHANGES

Approved changes may affect only documents or SSCs and associated documents.

1. Changes to drawings are incorporated in accordance with WHC-CM-6-1, EP-1.3.

2. Changes to text documents are incorporated in accordance with EP-2.2.

3. Implementation of an approved change to an SSC shall be accomplished via work authorizations in accordance with WHC-CM-1-8, Work Management and WHC-CM-8-8, Job Control System. All work completed changes shall be reviewed, inspected, and (if required) tested to determine if the change meets its post-implementation acceptance criteria.

   NOTE: It is very important that a link between the actual work performed (completed work packages) and the work authorizing document (ECN) be developed and maintained. This linkage is a critical part of the overall WHC change control process because it is this information that is used to establish the actual physical configuration.

6.7 DOCUMENTATION OF CHANGES

Changes are documented in accordance with WHC-CM-6-1, EP-1.2, EP-1.3, EP-1.12, and WHC-CM-3-5, Section 12.7, in enough detail to provide a clear, concise, and accurate representation of what happened. The documentation package should include the following:

- Description of the change
- Justification for the change
- Results of technical reviews
- Results of management reviews
- As-built documentation
- Post-implementation inspections and test results.

6.8 CHANGE CONTROL BOARDS

Change control boards are an option and may be established for TF&E if determined necessary by TF&E management. Two types of change control boards have been effective for the disposition and control of changes. They are defined as follows:

1. Programmatic Change Boards. A programmatic change control board dispositions all proposed programmatic changes that require RL approval. Further information regarding programmatic boards is found in WHC-CM-2-5.

2. Technical Change Control Boards. A technical change control board conducts reviews of proposed engineering changes that are within TF&E established thresholds (e.g., safety classification category, environmental safety, hazard). The TF&E change control board charter is described in Appendix C.

6.9 CHANGE CONTROL TRACKING

The current status (open or work-completed) of all technical changes are tracked via the ERSDB.

1. The technical baseline status of ECNs against any engineering document released through the engineering document release system is available through the CDWS.

2. Released ECNs are tracked by the CDWS until they are incorporated. To maintain two-way traceability, any ECN authorized by a change request will reference the authorizing change request number.

3. Each change request will reference those documents, such as letters and nonconformance reports, that were the bases for the change request. These references will be included in the engineering document release system database and change request logs.

7.0 ASSESSMENTS

Assessments measure the configuration management program effectiveness in establishing and maintaining the basic configuration management relationships. The assessment element assists in defining the needs of the configuration management program and testing the accuracy of the requirements, SSCs, and technical documentation. Assessments test the accuracy between the design requirements, the physical configuration, and documentation.

7.1 PROGRAMMATIC ASSESSMENTS

Programmatic assessments evaluate the adequacy of the TF&E configuration management program and procedures. Weaknesses within the program are captured in a TF&E "Configuration Management Compliance Matrix," which identifies the deficiency and track the resolution. In addition, the compliance matrix identifies areas within the configuration management program that, although not considered weaknesses, are being reviewed for potential enhancements within the configuration management program.

7.1.1 Initial Assessments

During the planning for the development of the TF&E configuration management program, initial assessments are conducted to determine the strengths and weaknesses of existing programs and procedures in order to determine where upgrade actions and resource expenditures are necessary. Existing assessments generated by audits, safety concerns, evaluations, and oversight reviews have been listed in the TF&E Configuration Management Compliance Matrix, and will be the areas that will be resolved as the first priority.

7.1.2 Post-implementation Assessments

Assessments are performed for each configuration management element to determine if the upgraded programs and procedures address identified weaknesses, are effective in accomplishing the configuration management functions, and are workable. After each system design basis document is developed by the design reconstitution program, a field validation is performed to ensure the accuracy of the requirements, physical configuration, and documentation.

7.1.3 On-going Assessments

Following implementation of the configuration management program and the appropriate adjunct programs, assessments are performed periodically to measure the overall configuration management program effectiveness and to determine if the degree of control is adequate and appropriate. The results of these assessments establish the basis for improvements or corrective action to the configuration management plan.

7.1.4 Vendor and Contractor Assessments

Assessments of vendor and contractor configuration management program, procedures, or practices should be performed to ensure that provided services (products, designs, data, documents, construction, modifications, and tests) are adequately documented and controlled.

7.1.5 Technical Reviews, Audits and Assessments

Technical reviews, audits, and assessments assess the integrated development and evolution of the technical baseline. All reviews, audits, and assessments will ensure the proper development, establishment, control, and verification of the technical baseline. These will be used to verify conformance with system and design requirements or specifications.

TF&E engineering documentation is subject to design verification in accordance with approved procedures and WHC-CM-6-1, EP-4.1, "Design verification Requirements." These design reviews and verifications are integrated with other elements of project management (e.g., construction, operations, maintenance, safety, reliability, training, logistics support, etc.) to ensure the technical adequacy of the design and the conformance of the design with the technical baseline requirements. Deficiencies and/or discrepancies disclosed by the design review are resolved and documented. Design review status reports are prepared and distributed to participating contractors as required through the CDWS.

Additional reviews have been planned and identified by Systems Engineering to support the development and approval of the technical baseline as it evolves. These reviews are as follows:

1. System requirements review
2. Technical requirements review
3. Design requirements review
4. Detailed design review
5. As-built design review
6. Operational readiness reviews
7. Decontamination and decommissioning review.

7.2 PHYSICAL CONFIGURATION ASSESSMENTS

Compliance with technical requirements specified in this plan are verified through assessment of the technical baseline documents. Functional and physical verification is performed using acceptance tests and operational tests developed for the project. Other physical verifications are performed through as-built activities to ensure that any discrepancies identified between technical documents and "as-found" configurations are documented.

1. Physical walkdowns are part of the initial and on-going assessments in accordance with WHC-SD-WM-WP-072, "Engineering Drawing Field Verification Program." During walkdowns, checks are made to establish the existence and accuracy of nameplates and nameplate data.

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

    a. The corrective actions include additional walkdowns to characterize the problem and to determine the extent of the problem.

b. The corrective actions include evaluations to determine whether the physical configuration or the documentation should be changed.

c. Discrepancies in nameplate information is corrected using the Tank Farm procedure 6-TF-100, "Maintenance Procedure (Waste Tank Labeling Procedure)."

7.3 PERIODIC EQUIPMENT PERFORMANCE MONITORING

Selected SSCs require testing on a scheduled periodic basis to determine if the equipment still meets its design requirements.

1. Monitoring addresses surveillance actions, periodic in-service inspections and tests, and other monitoring of SSCs to ensure safe and reliable operation of the SSC.

2. Monitoring includes measurements to collect and trend data to actual aging degradation of equipment, as determined by the material condition and aging (MCA) management program.

7.4 POST-MODIFICATION TESTING

The SSCs are tested after modification to determine if the modified equipment still meets its design requirements before being turned over for service.

8.0 COMPUTER SOFTWARE CONFIGURATION MANAGEMENT

Computer software configuration management applies to TF&E and 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 document.

The process of acquiring, developing, and maintaining software to support the analysis, design, and operation of program SSCs are controlled using appropriate software engineering and quality assurance procedures. These procedures verify that required documentation is provided for each stage of the software development and operational life and describe the methods to be used for the qualification of existing and acquired software. Procedures identify and describe software verification and validation requirements and software configuration management controls.

8.1 CONFIGURATION MANAGEMENT ACTIVITIES

Computer software is identified, developed, documented, changed, and controlled in accordance with the requirements and procedures established in WHC-CM-3-10, Software Practices, and facility specific instructions.

8.2 ACCESS CONTROL

Access controls are provided to help ensure that only correct versions of the computer software are in use and to:

1. Prevent unauthorized usage of the computer software.
2. Identify the location and user of each copy of the computer software.
3. Restrict copies of computer software to authorized users.
4. Ensure that only the authorized computer software developers are allowed to make computer software revisions.

8.3 BACKUP AND RECOVERY

1. Media control is exercised to ensure that computer software is periodically backed up during development to allow full reconstruction of the computer software within a few work days.
2. Computer software is stored in a location that is sufficiently distant from the application location so that a single disaster will not damage the media in both locations.
3. Software is backed up at each revision so that previous revisions can be re-established.

8.4 Supplier Control

Supplier provided software falls into two groups, vendor-provided and subcontracted software.

1. Vendor-provided software is software that is privately developed or existing software such as operating systems, compilers, word processing tools and database management systems. Vendor-provided software must conform to an acceptable form of software configuration management. If the vendor does not have an adequate software configuration management program, the vendor can be disqualified from providing software.

2. Subcontracted software is any developed software that is unique or dedicated under contract to a facility. Any subcontractor wishing to do business with a facility must conform to an acceptable form of software configuration management. If the subcontractor does not have an adequate software configuration management program, the subcontractor must conform to all provisions (as modified for their specific use) of this document and the appropriate facility CMP. Any subcontractor not willing to abide by the above provision may be disqualified.

9.0 ADJUNCT PROGRAMS

Adjunct programs identify and define one-time or periodic assessment activities that evaluate elements of design development. If the facility determines that these adjunct programs are required, the facility develops a program based upon the following guidance.

9.1 DESIGN RECONSTITUTION

Where design information for existing SSCs is found to be inadequate, the design reconstitution adjunct program is used to establish, organize, and document design information for systems and technical topics. The adequacy of existing design information is technically evaluated for the TF&E to determine the extent and priority of the design reconstitution needed. The design reconstitution program is defined and established in WHC-SD-WM-CM-009, Design Reconstitution Program Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System.

9.2 MATERIAL CONDITION AND AGING MANAGEMENT

Basic configuration management relationships can be compromised by degradation due to aging that causes the performance capability of equipment to deteriorate so that the equipment no longer meets its design requirements. The MCA program assesses the material condition, estimates the remaining SSC lifetime, and develops techniques that could be applied to extend the lifetime to complete the programmatic mission of a project. In addition, the MCA program provides analytical and testing procedures to support predictive and preventive maintenance of equipment. The MCA program is established and defined in WHC-SD-WM-PLN-068, Plan for the Tank Waste Remediation System Life Management/Aging Management Program.

10.0 REFERENCES

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WHC-CM-3-5, Document Control and Records Management Manual, Section 12.7, "Approval of Environmental, Safety, and Quality Documents."

WHC-CM-3-10, Software Practices.

WHC-CM-6-1, Standard Engineering Practices.
EP-1.1, "Engineering Document Identification Requirements."
EP-1.2, "Engineering Specifications Requirements."
EP-1.3, "Engineering Drawing Requirements."
EP-1.5, "Interface Control Requirements."
EP-1.6, "Engineering Data Transmittal Requirements."
EP-1.7, "Engineering Document Approval and Release Requirements."
EP-1.12, "Supporting Document Requirements."
EP-2.2, "Engineering Document Change Control Requirements."
EP-3.3, "Vendor Information Requirements."
EP-4.1, "Design Verification Requirements."

WHC-CM-6-2, Project Management.

WHC-CM-8-8, Job Control System.

WHC-IP-0842, Waste Tanks Administration.

WHC-SD-HS-SAR-006, Safety Analysis Report, Single Shell Tank Isolation.

WHC-SD-HS-SAR-010, Aging Waste Facility Safety Analysis Report.

WHC-SD-HS-SAR-016, Double Shell Tank Farm Facility Safety Analysis Report.

WHC-SD-HS-SAR-023, Evaporator/Crystallizer Safety Analysis Report.

WHC-SD-WM-CM-005, List of Structures and Systems for the Tank Farm & Evaporator Configuration Management Program.

WHC-SD-WM-CM-007, Configuration Management Compliance Matrix.

WHC-SD-WM-CM-009, Design Reconstitution Program Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System.

WHC-SD-WM-PLN-068, Plan for the Tank Waste Remediation System Life Management/Aging Management Program.

WHC-SD-WM-RPT-058, Tank Farm Facility Boundary Evaluation List.

WHC-SD-WM-SD-005, Tank Farm Cognizant Engineer Responsibilities.

WHC-SD-WM-SEL-020, Aging Waste Facility Interim Safety Equipment List.

WHC-SD-WM-SEL-026, Double Shell Tank Interim Safety Equipment List.

WHC-SD-WM-SEL-027, Single Shell Tank Waste Interim Safety Equipment List.

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WHC-CM-2-1, Procurement Manual and Procedures.

WHC-CM-3-4, Information Release Administration.

WHC-CM-3-6, Uniform Publications System.

WHC-CM-4-2, Quality Assurance Manual.

WHC-CM-4-3, Industrial Safety Manual.

WHC-CM-4-9, Radiological Design.

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WHC-CM-7-5, Environmental Compliance.

WHC-IP-0944, "Multi-Functional Waste Tank Facility Configuration Management."

WHC-SD-WM-CM-010, "Configuration Management Activities of Tank Farm & Evaporator Facilities."

WHC-SD-WM-PLN-042, "Standardized Labeling Program for Tank Farms."

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-1

PROGRAM MANAGEMENT ACTIVITIES		RESPONSIBILITY
1.	Develop CM Program	TWRS Plant
2.	Develop and maintain CM Plan	TWRS Plant
3.	Develop CM action plan	TWRS Plant
4.	Implement CM action plan	TWRS Plant Design Agent
5.	Review existing procedures	TWRS Plant Design Agent Operations Engineering, Analysis, and Technology
6.	Develop new procedures	TWRS Plant Engineering, Analysis, and Technology
7.	Revise existing procedures	TWRS Plant Engineering, Analysis, and Technology
8.	Establish CM training requirements	TWRS Plant
9.	Establish CM training program	TWRS Plant
10.	Conduct CM training	Training
11.	Develop and maintain WBS dictionary	Systems Engineering Program Office
12.	Identify roles and responsibilities for configuration management participants.	TWRS Plant Design Agent
13.	Establish controls for SSCs and related documentation.	TWRS Plant Design Agent
14.	Develop and use of configuration management databases to maintain accountability, traceability, and retrievability of documentation packages. 1. Equipment List 2. Requirements and Interfaces 3. Operations and maintenance procedures 4. Document and ECN tracking (ERSDB)	1. TWRS Plant 2. Systems Engineering 3. Operations 4. Engineering, Analysis and Technology
15.	Develop Functions and Requirements baseline	Systems Engineering
16.	Develop Technical Requirements baseline	Systems Engineering
17.	Develop Design Requirements baseline	Systems Engineering
18.	Develop Design Configuration baseline	Design Agent
19.	Develop As-built/Operations baseline	TWRS Plant
20.	Develop D&D baseline	TWRS Plant
21.	Define organizational interfaces	TWRS Plant
22.	Establish effective vendor controls	TWRS Plant

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-2

	DESIGN REQUIREMENTS ACTIVITIES	RESPONSIBILITY
1.	Develop a master equipment list to identify SSCs and associated documentation and requirements.	TWRS Plant
2.	Establish Design process	Systems Engineering
3.	Establish design basis information	Systems Engineering Design Agent
4.	Document design basis	Systems Engineering Design Agent
5.	Approve design basis	Design Agent
6.	Establish requirements	Design Agent TWRS Plant
7.	Document requirements	Design Agent
8.	Approve requirements	Design Agent
9.	Define graded approach	TWRS Plant
10.	Identify SSCs	TWRS Plant
11.	Approve identification of SSCs	TWRS Plant
12.	Rank SSCs	TWRS Plant
13.	Approve ranking of SSCs	TWRS Plant
14.	Conduct SSC labeling	TWRS Plant
15.	Establish physical interfaces	TWRS Plant
16.	Establish Interface Control Working Group	Systems Engineering
17.	Develop a Surveillance and Maintenance Plan that identifies the SSCs that will be included in the surveillance and maintenance program. This plan will include a list of documents that must be maintained during the program and made a part of the D&D turnover package.	TWRS Plant
18.	Maintain access control for computer software	Design Agent TWRS Plant
19.	Ensure computer software are routinely backed up.	Design Agent TWRS Plant
20.	Develop and maintain a deactivation turnover package	TWRS Plant

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-3

	DOCUMENT CONTROL ACTIVITIES	RESPONSIBILITY
1.	Identify the types of documents that will be included in the configuration management program	TWRS Plant
2.	Identify document owners	Design Agent TWRS Plant
3.	Identify document users	TWRS Plant
4.	Review existing documents for adequacy	Document owners and users
5.	Determine documents needing reconstitution	Document owners Document users TWRS Plant Design Agent
6.	Notify Document users of approved changes	TWRS Plant Design Agent
7.	Store documents	BCSR CDWS
8.	Establish document retention times	TWRS Plant
9.	Control documents and approved changes	BCSR
10.	Track documents and approved changes	CDWS (ERSDB)
11.	Retrieve documents	CDWS BCSR

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-4

CHANGE CONTROL ACTIVITIES		RESPONSIBILITY
1.	Identify change mechanisms	Design Agent TWRS Plant
2.	Develop and maintain method to track approved changes	CDWS (ERSDB)
3.	Develop and maintain method to track all changes	TWRS Plant
4.	Technical review of changes	Design Agent TWRS Plant
5.	Management review of changes	Design Agent TWRS Plant
6.	Implementation of physical changes	TWRS Plant Operations
7.	Establish post implementation acceptance criteria	TWRS Plant Design Agent
8.	Implementation of non-physical changes (Changes to documents and databases only)	Design Agent TWRS Plant Operations
9.	Documentation of changes	Design Agent TWRS Plant Operations

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-5

ASSESSMENT ACTIVITIES		RESPONSIBILITY
1.	Conduct initial CM assessment (This includes vendors and contractors)	TWRS Plant Design Agent Quality Assurance Engineering, Analysis, and Technology
2.	Conduct Post-implementation assessment (This includes vendors and contractors)	TWRS Plant Design Agent Quality Assurance Engineering, Analysis, and Technology
3.	Conduct ongoing assessments (This includes vendors and contractors)	TWRS Plant Design Agent Quality Assurance Engineering, Analysis, and Technology
4.	Develop assessment check list	Quality Assurance Engineering, Analysis, and Technology
5.	Approve assessment check list	TWRS Plant Design Agent Engineering, Analysis, and Technology
6.	Resolve discrepancies	TWRS Plant Design Agent Engineering, Analysis, and Technology (if procedures or site CM program are affected)
7.	Conduct Design Reviews	Design Agent TWRS Plant
8.	Develop as-building program	Design Agent TWRS Plant Quality Assurance
9.	Conduct as-building program	Design Agent TWRS Plant Quality Assurance Operations
10.	Develop periodic equipment tests	Design Agent TWRS Plant
11.	Conduct periodic equipment tests	TWRS Plant Operations
12.	Review existing post-modification testing program	TWRS Plant Operations Design Agent
13.	Revise post-modification testing procedures	TWRS Plant Operations Design Agent

Appendix A

CONFIGURATION MANAGEMENT ACTIVITY RESPONSIBILITY

Table A-6

ADJUNCT PROGRAM ACTIVITIES		RESPONSIBILITY
Design Reconstitution		
1.	Develop and maintain DR program plan	TWRS Plant
2.	Develop and maintain DR action plan	TWRS Plant
3.	Implement DR action plan	TWRS Plant Design Agent
4.	Develop procedures	TWRS Plant Design Agent
5.	Develop Pilot program	TWRS Plant Design Agent
6.	Implement pilot program	TWRS Plant Design Agent
Material Condition and Aging Management		
1.	Develop and maintain MCA program plan	TWRS Plant
2.	Develop and maintain MCA action plan	TWRS Plant
3.	Implement MCA action plan	TWRS Plant
4.	Develop procedures	TWRS Plant

Appendix B

GRADED APPROACH

The graded approach provides guidance on the process and methods that will be used to tailor the configuration management program and the adjunct programs of design reconstitution and material condition and aging management to the specific conditions and needs of the TF&E facilities. For this plan, the graded approach determines the level of detail required for documentation to adequately identify and control SSCs.

The graded approach is not being used to determine the selection of SSCs that are included in the TF&E configuration management program because all SSCs (as identified by WHC-SD-WM-CM-005) are within the scope of the CM program. The graded approach presented here determines the extent to which appropriate resources are applied to adequately document the SSC.

This graded approach does not eliminate or circumvent any of the elements or functions in the configuration management program. This approach does provide the process that identifies and integrates the existing methodologies of safety classification, operational requirements, and facility life-cycle phases for classifying the relative importance of SSCs and the necessary documentation to support SSC classification. The following grading criteria serves as guidance to determine the amount of documentation necessary to control and maintain the configuration.

1.0 SSC SELECTION CRITERIA

SSC selection basis:

- Safety class
- Drawing category
- SSC status

1.1 Safety Classification

Safety classifications (1&2, 3, and non-safety class 4) considers the consequences and impact to the environment, public, facility personnel, and D&D activities due to the release of radiological and toxicological material into the surrounding environment. SSCs are classified according to their ability to prevent or mitigate the consequences of hazards and design requirement accidents in accordance with the criteria established in WHC-CM-1-3, MRP 5.46, as listed below.

1.2 Drawing Category

SSCs are selected, categorized, and ranked based on their importance for safe operation and are depicted on the appropriate drawing category (essential, support, general, or construction) specified in WHC-CM-6-1, EP-1.3. Drawings that are identified as essential shall be re-evaluated if the SSC is used in limited operations in support of reduced facility mission. If an SSC was identified as essential to support facility limited operation and considered essential to support a reduced facility mission or deactivation, the drawing will remain essential.

Appendix B

GRADED APPROACH (continued)

1.3 SSC Status

SSCs are selected, categorized, and ranked based on their planned or scheduled physical disposition. The physical statuses are:

- Operational
  - Full - SSCs that are required to support day-to-day operation of the facility and are operated at or near full.
  - Limited - SSCs that are operated on an as-needed basis or are operated at a reduced capacity.
- Non Operational
  - Maintaining operational capability
  - Not maintaining operational capability

1.4 Documentation Levels

1. Full Documentation - The set of documentation (e.g., design basis and requirements, drawings, specifications, operating and maintenance procedures) that specifies the function or performance of SSCs or depicts the physical arrangement of or environment within which the SSC performs its intended purpose.

2. Partial Documentation - The set of design basis and requirements documentation that defines an SSC that is necessary to support the safe operation and maintenance of a facility.

3. Minimum Documentation - The set of design basis and/or requirements documentation that defines a specific SSC that is necessary to support operations and maintenance of a facility.

Appendix B

GRADED APPROACH (continued)

2.0 APPLICATION

The configuration management graded approach is based on a fundamental requirement that all SSCs within a facility will be included in the configuration management program. The graded approach is used to identify the level of documentation that is required to define an SSC based on its importance to the facility, program, or project. Table B-1 summarizes the criteria that is used to determine the types and amount of documentation that is required to define and support each SSC that is in the configuration management program.

Table B-1. Graded Approach Criteria

LEVEL OF DOCUMENTATION	SAFETY CLASS			DRAWING CLASSIFICATION				SSC STATUS			
								OPERATIONAL		NON OPERATIONAL	
	1 & 2	3	4	Essential	Support	General	Construction	Full	Limited	Maintain Operational Capability	Not Maintain Operational Capability
Full	R	OP	OP	R	OP	OP	R	R	OP	R	OP
Partial		R	OP		R	OP			R		OP
Minimal			R			R					R

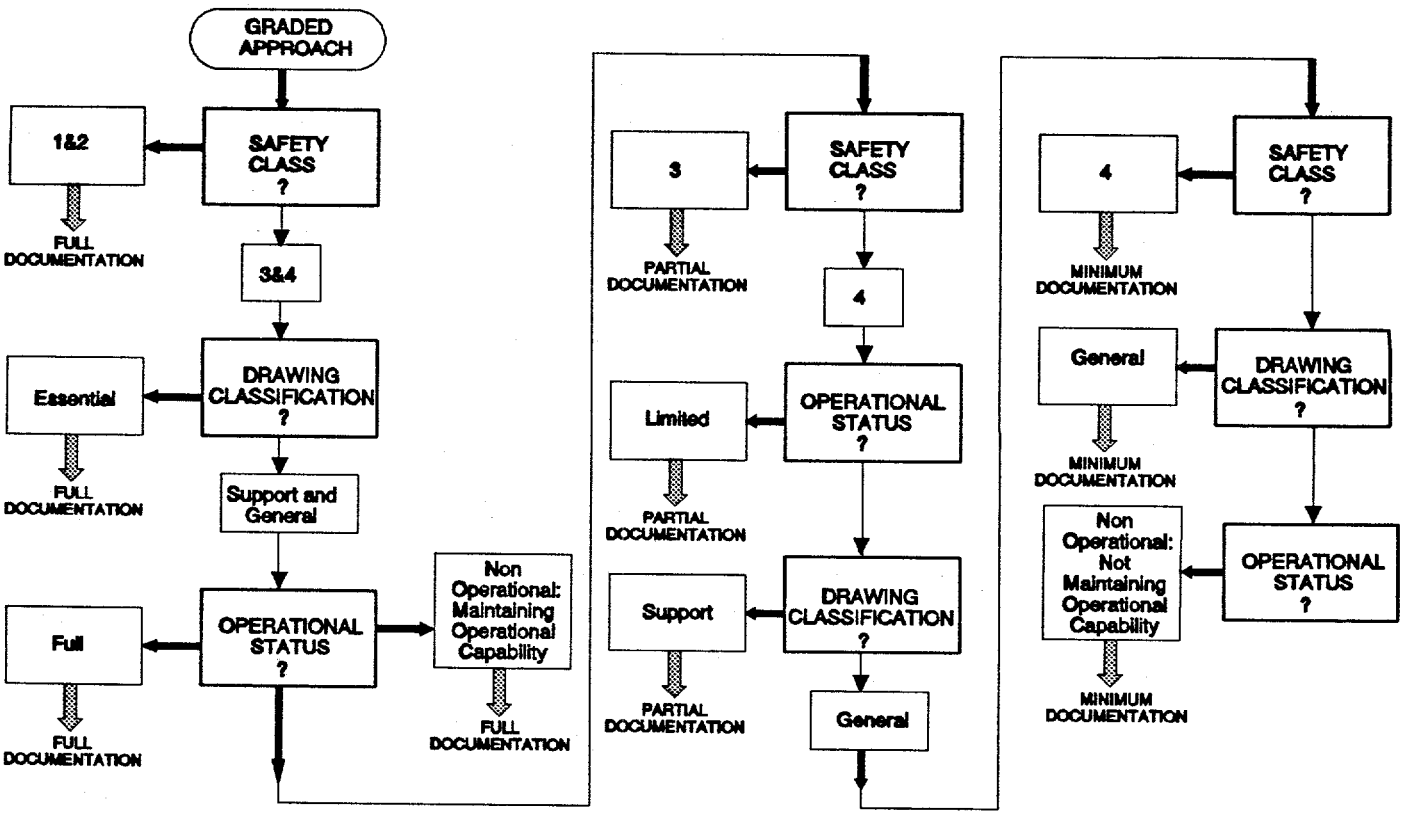
R = Required
OP = Optional
= Not Applicable

Figure B-1 is used by starting with safety class and working down the flow path to determine, based on the available selections, what the highest level of documentation is required for the SSC under consideration. Once the highest level has been ascertained, Tables A-1 and A-2 or A-3 are used to identify the types of documents that are required to support the facility and its SSCs.

Appendix B

GRADED APPROACH (continued)

Figure B-1. Graded Approach Criteria Flow Process



3.0 DOCUMENTATION LEVEL RANKING

Once the SSCs have been generally categorized, situations may occur where more than one SSC requires the same level of documentation and these SSCs appear to be of equal importance. A second set of criteria may be required to rank SSCs within the same documentation level (full, partial, or minimum). The following ranking guidance is provided to assist in this grading for appropriate documentation:

Appendix B

GRADED APPROACH (continued)

First Ranking

SSC STATUS

Note: Order of importance of this priority is independent of safety classification.

1st Essential Drawing
2nd SSC is fully operational
3rd SSC is non Operational: Maintaining full operational capability
4th SSC is operating on a limited basis
5th Support Drawing
6th General Drawing
7th SSC is non Operational: Not maintaining full operational capability

Second Ranking

DOCUMENTATION CONDITION

1st Documentation is missing
2nd Documentation is incomplete and available information is inaccurate
3rd Documentation is complete and available information is inaccurate
4th Documentation is incomplete and available information is accurate
5th Documentation is complete and accurate

Third Ranking

SSC REMAINING LIFE

1st Greater than 10 years
2nd Between 5 and 10 years
3rd Between 2 and 5 years
4th Less than 2 years

Appendix B

GRADED APPROACH (continued)

Table B-2. Recommended Minimum SSC Design Basis Documentation According to Level

DESIGN BASIS DOCUMENT	LEVEL		
	FULL	PARTIAL	MINIMUM
CALCULATION AND ANALYSIS	•		
COMPUTER SOFTWARE REQUIREMENTS	•		
CONCEPTUAL DESIGN REPORT	•	•	
FUNCTIONAL DESIGN CRITERIA	•		
FUNCTIONS AND REQUIREMENTS DOCUMENT	•	•	
MISSION DEFINITION DOCUMENTS	•		
SAFETY ANALYSIS REPORT (Preliminary/Final)	•	•	
SYSTEM REQUIREMENTS DOCUMENT	•	•	

Appendix B

GRADED APPROACH (continued)

Table B-3. Recommended Minimum SSC Requirements Documentation According to Level

REQUIREMENT DOCUMENT	LEVEL		
	FULL	PARTIAL	MINIMUM
ACCEPTANCE TESTING	•	•	
COMPUTER SOFTWARE DOCUMENTATION	•	•	•
CONCEPTUAL DESIGN REPORT	•	•	
DETAILED ENGINEERING DRAWINGS	•	•	•
EQUIPMENT LISTS	•	•	
FINAL SAFETY ANALYSIS REPORT	•	•	
FLOW DIAGRAMS (IEFDs AND P&IDs)	•	•	
INTERFACE CONTROL DOCUMENT	•	•	•
OPERATIONS AND MAINTENANCE PROCEDURES	•	•	•
SPECIFICATIONS	•	•	
SYSTEM DESIGN DESCRIPTION	•	•	•
TECHNICAL SAFETY REQUIREMENTS	•	•	•
VENDOR INFORMATION	•	•	•
WASTE TANK CONTENT CHARACTERIZATION DATA	•	•	•

Appendix C

CHANGE CONTROL BOARD CHARTER

1.0 INTRODUCTION

A facility Change Control Board (CCB) is chartered to ensure that the principles of configuration management are maintained through the establishment of adequate technical, cost, and schedule baselines and the necessary controls required for a disciplined change process to these established baselines.

1.1 PURPOSE

The optional facility CCB serves as the forum for establishing and preserving the technical relationships presented in the configuration management program. The CCB (1) evaluates change impacts within the facility or across facility boundaries, (2) dispositions proposed changes (programmatic changes that are recommended for approval, are processed in accordance with WHC-CM-2-5), (3) evaluates alternatives for changes, and (4) approves the configuration management program and subsequent changes.

1.2 SCOPE

This charter establishes the facility CCB, identifies the CCB membership and their associated responsibilities and primary functions, and establishes board policies and procedures that will be followed to control and manage changes made within the facility.

2.0 MEMBERSHIP

Each facility that elects to use a CCB shall determine the board membership. The CCB is comprised of members from a facility that have the knowledge of their respective organization to evaluate the proposed changes. The CCB membership composition is balanced to achieve fair representation of organizations in technical and programmatic areas.

The CCB members (primary and authorized alternates) will be identified and formally documented, and such documentation will remain on file with the Change Control Administrator (CCA) or equivalent. The members will attend CCB meeting and address, discuss, and answer any questions that arise during the meeting. They may delegate their authority as they deem necessary. CCB members will provide pertinent information on configuration changes being addressed at the meeting, as required. Additional members, such as representatives from the D&D Transition Group, may be assigned as the board members find necessary to disposition change proposals.

Appendix C

CHANGE CONTROL BOARD CHARTER (continued)

3.0 RESPONSIBILITIES

3.1 CCB CHAIRPERSON

The CCB Chairperson, appointed by the facility manager, will:

1. Preside over CCB meetings.
2. Ensure the necessary resources are available to adequately review and disposition proposed changes.
3. Schedule the CCB meetings.
4. Assign an individual to the position of CCA.

3.2 Change Control Administrator

The change control administrator will:

1. Assign change identification numbers.
2. Maintain a central file for copies of change requests, ECNs, and status sheets.
3. Maintain a change control log.
4. Assemble the change control package and send it to each member of the CCB for consideration.
5. Track the change and status.
6. Provide CCB members with meeting agendas.
7. Attend the CCB meetings and write and issue meeting minutes.

3.3 CCB Members

CCB members will:

1. Review and evaluate the proposed changes for technical, cost, and schedule impacts.
2. Recommend final change disposition.

Appendix C

CHANGE CONTROL BOARD CHARTER (continued)

4.0 EXTERNAL INTERFACE AGREEMENTS

Where appropriate, the CCB should enter into agreements with external programs, projects, or facilities to establish the procedure for coordinating the review and approval of changes (permanent or temporary) to an interface that may impact a facility's operating SSCs.

5.0 CCB CHANGE CLASSIFICATION

1. Emergency. An emergency change is a change that requires approval and implementation within 24 hours to correct an unsafe condition, reestablish the safety envelope, or avoid imminent violation of safety and/or environmental requirements. This type of change requires immediate attention of resources to stabilize the condition.

2. Urgent. An urgent change is a change that requires approval and implementation within 5 calendar days to correct a potentially hazardous condition, comply with contractual requirements, or effect a corrective action that potentially prevents or mitigates a schedule delay or cost impact.

3. Routine. A routine change is a change THAT supports the routine actions necessary to ensure continued safe operations of the facility.

6.0 RECORDS

Name (Filing Unit Title of Description)	Record Type*	Retention Period	Disposal Authority**	Cut-Off and Retirement Instructions
Records relating to establishment, organization, membership, and policy of the board.	R	Destroy two years after termination of committee.	GRS 16.8.a	Committee secretary retains. If the board disbands, send to permanent records storage facility.
Board records:	R	Destroy when three years old or when no longer needed for reference, whichever is sooner.	GRS 16.8.b	Destroy in office after retention period is complete. If the board is disbanded, send any remaining records to permanent records storage facility.
(1) Agenda, minutes, final reports, and related records documenting the accomplishments.				
(2) All other committee records.				

*R - Record Material
**GRS - General Records Schedules

GLOSSARY

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

As-Built - Documentation (for example, Piping and Instrument Diagrams, and database records) verified by physical inspection as depicting the actual physical configuration and verified as consistent with the 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 Classification - A system of classifying changes for WHC programs and projects, based on the threshold criteria and approval requirements identified in this plan.

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

Change Control Administrator - The person responsible for processing proposed changes and maintaining the Change Request database.

Change Boards - A board composed of technical and administrative representatives who review, approve, disapprove, or defer changes to an approved cost, schedule, or technical baseline. These boards may be established by the WHC program, contractors, or individual projects.

Change Control Board (Programmatic) - A board composed of technical and administrative representatives from WHC and RL who review, approve, disapprove, or defer programmatic changes to an approved cost, schedule, or technical baseline. In addition, other site contractors, that support the WHC, may have their own change boards with well defined procedures and/or charters.

Change Control Board (Facility) - An optional board composed of technical and administrative representatives of the WHC program and project functional areas who evaluate and approve, disapprove, or defer proposed changes to an approved baseline configuration item. This board becomes mandatory when a proposed change from one project has an impact on another project or outside services.

GLOSSARY (continued)

Change Identification Number - The number assigned to each programmatic change request for tracking and reporting purposes.

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).

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 CM program consists of CM functions associated with the following program elements: program management, design requirements, document control, change control, and assessments. The CM program also includes design reconstitution and material condition and aging management as adjunct programs.

Configuration Management Authority - An individual within the WHC program or project organization that is responsible with overseeing that organizations implement configuration management program. This responsibility includes, but is not limited to, developing and/or maintaining appropriate configuration management plans and procedures.

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 CM 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.

GLOSSARY (continued)

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.

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.

Emergency Change - A change that requires approval to initiate work to correct a hazardous safety condition or that may cause work stoppage.

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).

Facility Documents - Those documents that support facility operations, such as-built configuration information (such as drawings, valve lists, etc.), the facility procedures for activities (such as operations, maintenance, and testing), and facility operational records (such as completed tests, work requests, and radiation survey maps).

Field Validation - For the design reconstitution program, the process of providing reasonable assurance that design requirements are properly reflected in the physical configuration and in the associated facility documentation. Field validation tests the strength of the basic CM relationships among the design requirements, physical configuration, and facility documentation.

Formal Design Review - Design verification performed by a systematic overall critical review and evaluation of a design by a committee representing various disciplines.

GLOSSARY (continued)

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.

Material Condition & Aging Management - An adjunct program to the CM 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.

Project Review - A review of engineering design documents by WHC to ensure that the design meets the criteria established in the technical baseline documents.

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.

GLOSSARY (continued)

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.

Turnover Requirements - Facility physical conditions that will be met and documentation that is provided before a facility is turned over.

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