

DNFSB RECOMMENDATION 92-4
IMPLEMENTATION PLAN
REVISION 1

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Approved by: W. T. Alunkal
W. T. Alunkal, Executive Vice President
Tank Waste Remediation System
Westinghouse Hanford Company

9/22/94
Date

Approved by: T. R. Sheridan
T. R. Sheridan, Acting Assistant Manager
Tank Waste Remediation System
U.S. Department of Energy
Richland Operations Office

9/22/94
Date

Approved by: A. L. Trego
A. L. Trego, President
Westinghouse Hanford Company

9/22/94
Date

Approved by: J. D. Wagoner
J. D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

9/22/94
Date

Concurrence: James W. Antizzo
James W. Antizzo, Acting Director
Office of Hanford Waste
Management Operations
U.S. Department of Energy
Headquarters (EM-36)

9/23/94
Date

**92-4 IMPLEMENTATION PLAN
Revision 1**

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**92-4 IMPLEMENTATION PLAN
Revision 1****EXECUTIVE SUMMARY**

Hanford Site radioactive waste from defense production is stored in 177 underground tanks. Many of these tanks are over 40 years old and are deteriorating. Consequently, their condition has raised potentially serious public health and safety concerns. These concerns include leakage of radioactive waste, periodic release of flammable gases, development of potentially unstable organic and ferrocyanide compounds, release of potentially toxic vapors, nuclear criticality concerns, and excessive heat generation. These tanks and other Hanford facilities need to be cleaned up in a systematic manner.

In December 1991, the Department of Energy (DOE) initiated the Tank Waste Remediation System Program (TWRS) to resolve the waste tank safety issues and remediate the tank waste. As part of TWRS, a new project was started to design a Multi-Function Waste Tank Facility (MWTF). The facility would contain six new tanks for diluting and storing waste removed from old tanks that have priority safety issues.

During 1992, the Defense Nuclear Facilities Safety Board (DNFSB), hereafter referred to as "the Board," initiated its reviews of the MWTF project. Conceptual design of the MWTF was being completed at the time. As a result of the review, the Board submitted Recommendation 92-4 to the Secretary of Energy on July 6, 1992.

The Board, in Recommendation 92-4, recommended that DOE do two things: (1) the DOE should establish a plan and methodology that results in a project management organization for the MWTF project team that ensures that both DOE and the contractor organization have personnel with the technical and managerial competence necessary to assure effective project execution; and (2) the DOE should identify the design bases and engineering principles and approaches for the MWTF Project that provide the data and rationale to show that the design for the MWTF conservatively meets the quantitative safety goals described in the Department's Nuclear Safety Policy (SEN-35-91).

Having reviewed the situation at Hanford in light of the Board's recommendations and comments, DOE concluded that the MWTF problems that led to the recommendations were symptomatic of a more general and fundamental problem at Hanford -- the lack of an integrated systems approach to defining, planning, controlling, and executing the Hanford mission. Therefore, DOE reconsidered its overall approach to cleaning up Hanford by interpreting the Board's recommendations on a broader scale. The emphasis in this plan is initially directed to the TWRS program. As the owner, DOE sets policy, establishes high-level requirements, and approves Westinghouse Hanford Company (WHC)-proposed actions to implement these requirements.

DOE accepted the Board's recommendations on August 28, 1992, and proposed an implementation plan on February 4, 1993. This plan recognized that solving the MWTF issues raised by the Board required an integrated approach to the Hanford Mission. Therefore, the proposed plan considered the MWTF project within the context of the TWRS program. In the Board's response of April 23, 1993, to the proposed plan, the Board strongly endorsed DOE's efforts both to plan the MWTF activities within the context of TWRS and to extend the principles outlined in the recommendation to the overall TWRS program. However, the Board rejected the proposed plan since it did not definitively address specific actions to be taken by DOE and WHC. The Board also identified other weaknesses that were corrected in the March 18, 1994, submittal.

On June 2, 1994, the Board conditionally accepted the 92-4 Implementation Plan, dated March 18, 1994, with comments. Since the March 18, 1994, submittal, the management systems and documentation structure have been evolving in response to other DOE improvement efforts. Revision 1 to this plan reflects the incorporation of the Board's comments and results of the improvement efforts. Several commitments in the March 18, 1994, version of the plan have been revised, and some changes have been made to documentation titles and content.

This implementation plan is organized into five areas:

1. Introduction
2. Systems Engineering
3. Program Management
4. Reporting Requirements
5. Change Control.

The majority of the actions are contained in two sections, Systems Engineering and Program Management.

To implement the Board's recommendations, DOE initiated a site-wide systems engineering approach for the definition and achievement of objectives at Hanford. DOE also streamlined management to improve efficiency and provide a clear line of responsibility and accountability. DOE is enhancing its management systems to implement the systems approach to managing the TWRS. This plan describes how these efforts will achieve the purpose of the Board's recommendations and also gives definitive milestones that the Board can use to measure DOE's progress.

Pursuant to PL 100-456 (National Defense Authorization Act, Fiscal Year 1989), this plan is DOE's response for implementing Recommendation 92-4. This plan has been developed to ensure it meets the requirements of the Board's Policy Statement 1 (PS-1) regarding adequacy of DOE Implementation Plans for Board Recommendations.

**92-4 IMPLEMENTATION PLAN
Revision 1****1.0 INTRODUCTION**

Hanford Site radioactive waste from defense production is stored in 177 underground tanks. Most of these tanks are over 40 years old and are deteriorating. Consequently, their condition has raised potentially serious public health and safety concerns. These concerns include leakage of radioactive waste, periodic release of flammable gases, development of potentially unstable organic and ferrocyanide compounds, release of potentially toxic vapors, nuclear criticality concerns, and excessive heat generation. These tanks and other Hanford facilities need to be cleaned up in a systematic manner.

1.1 RECOMMENDATION OF THE BOARD

The Defense Nuclear Facilities Safety Board (DNFSB) -- hereafter referred to as "the Board" -- in Recommendation 92-4, recommended that the Department of Energy (DOE):

1. Establish a plan and methodology that results in a project management organization for the MWTF project team that assures that both DOE and the contractor organization have personnel of the technical and managerial competence to ensure effective project execution. This should emphasize management aspects of the project necessary to ensure adequate protection of public health and safety and should include the integration of professional engineering and quality assurance as necessary into the project, the application of appropriate standards and approved Department of Energy requirements, and the establishment of clear lines of responsibility and accountability.
2. Identify the design bases and engineering principles and approaches for the MWTF project that provide the data and rationale to show that the design for the MWTF conservatively meets the quantitative safety goals described in the Departments' Nuclear Safety Policy (SEN-35-91). The Board believes that this would include items related to standards, identification of safety related items, detailed design bases, functional design criteria, and safety analyses.

1.2 DOE RESPONSE TO THE DNFSB 92-4 RECOMMENDATION

Having reviewed the situation at Hanford in light of the Board's recommendations and comments, DOE concluded that the Multi-Function Waste Tank Facility (MWTF) problems that led to the recommendations were symptomatic of a more general and fundamental problem at Hanford -- the lack of an integrated systems approach to defining, planning, controlling, and executing the Hanford

mission. Therefore, DOE reconsidered its overall approach to cleaning up Hanford by interpreting the Board's recommendations on a broader scale. The emphasis in this plan is initially directed to the Tank Waste Remediation System (TWRS) program. This plan describes the activities to be carried out by DOE and Westinghouse Hanford Company (WHC), the Hanford Management and Operations (M&O) contractor.

DOE accepted the Board's recommendations on August 28, 1992, and proposed an implementation plan on February 4, 1993. This plan recognized that solving the MWTF issues raised by the Board required an integrated approach to the Hanford Mission. Therefore, the proposed plan considered MWTF within the context of the TWRS program. In the Board's response of April 23, 1993, to the proposed plan, the Board strongly endorsed DOE's efforts both to plan MWTF activities within the context of TWRS and to extend the principles outlined in the recommendation to the overall TWRS program. However, the Board rejected the proposed plan since it did not definitively address specific actions to be taken by DOE and WHC. The Board also identified other weaknesses that were corrected in the March 18, 1994, Plan submittal.

On June 2, 1994, the Board accepted, with comment, the 92-4 Implementation Plan dated March 18, 1994. Since the March 18, 1994, submittal, the management systems and documentation structure have been evolving in response to other DOE improvement efforts. Revision 1 to this plan reflects the incorporation of the Board's comments and results of the improvement efforts. Several commitments in the March 18, 1994, version of the plan have been revised, and some changes have been made to document titles and content.

As the owner, DOE sets policy, establishes high-level requirements, and approves WHC-proposed actions to implement these requirements.

1. WHC will develop a clearly organized program management structure with technically qualified and competent people who have the proper program management tools to plan, organize, direct, control, and measure performance, as well as the necessary experience to systematically carry out the clean-up mission at Hanford.
2. WHC will develop and apply a disciplined systems engineering methodology on TWRS to ensure that the overall design requirements and decisions; research and development; and construction, testing, operations, and termination (decommissioning) efforts are considered in an integrated fashion. The methodology will be applied to MWTF and other projects, not only because of the factors inherent to MWTF, but also because of interactions with other activities at the Hanford Site.

To implement the Board's recommendations, DOE initiated a site-wide systems engineering approach for the definition and achievement of objectives at Hanford. DOE also streamlined management to improve efficiency and provide a clear line of responsibility and accountability. DOE is enhancing its management systems to implement the systems approach to managing the TWRS.

This plan describes how these efforts will achieve the purpose of the Board's recommendations and also gives definitive milestones that the Board can use to measure DOE progress.

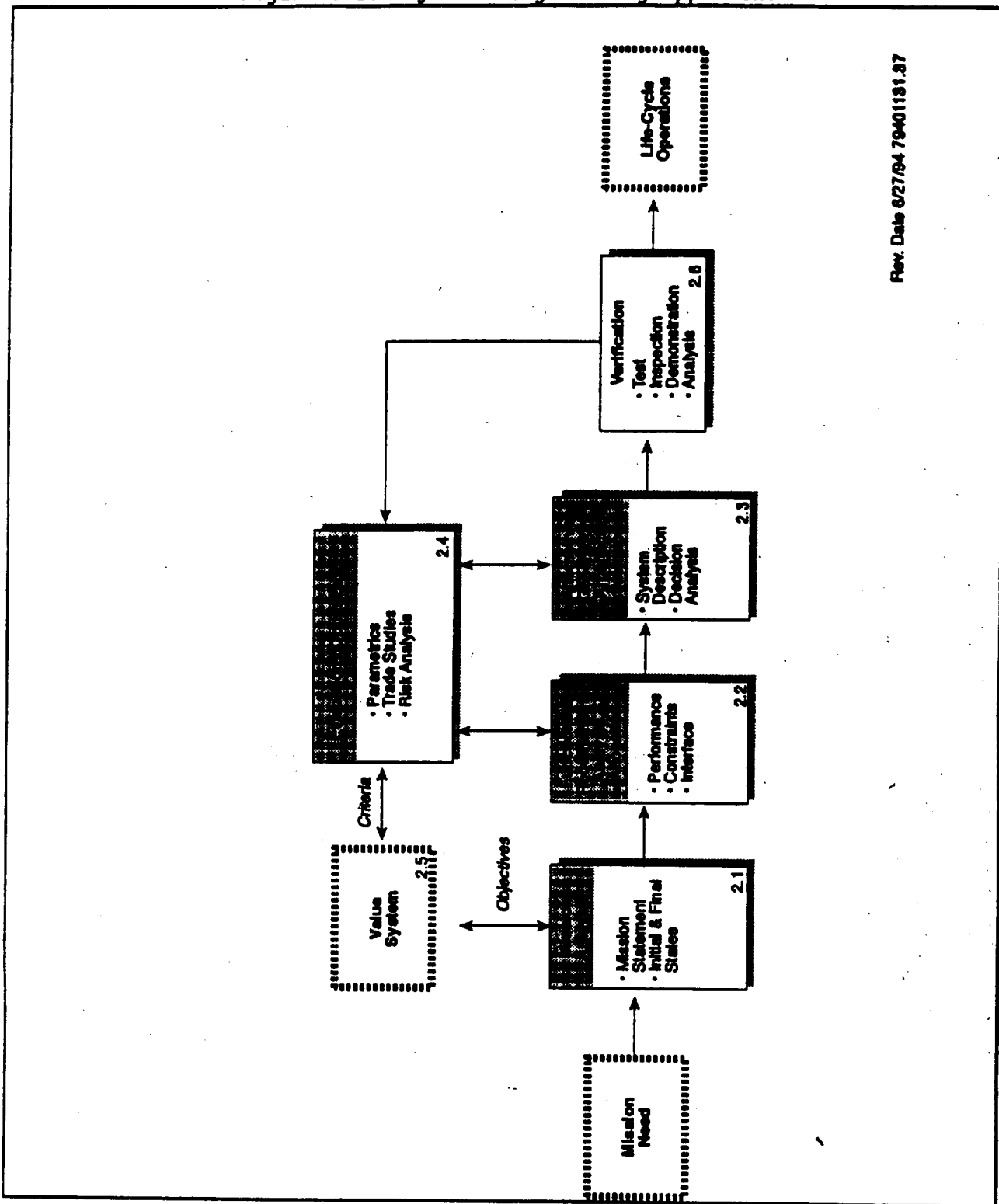
1.3 ORGANIZATION OF THE IMPLEMENTATION PLAN

This plan consists of two integrated efforts: A program management effort, which addresses the first recommendation, and a systems engineering effort, which addresses the second. This plan will accommodate parallel site and program systems engineering. The need for timely integration of programs and projects; timely input for technical decision making; and the incorporation of regulatory constraints, management expectations, and divergent values in programmatic decision making will be satisfied by implementing this plan.

Figure 1-1 provides an overview of the systems engineering approach to implement 92-4 using a logic flow diagram. The broad application of the systems engineering approach DOE will be taking at Hanford will affect other Board recommendations (listed in Table 1-1) that impose requirements on the Hanford system. The systems approach will incorporate the requirements from these recommendations and their respective implementation plans.

This 92-4 Implementation Plan contains five sections. Section 2.0 addresses the systems engineering aspects of the plan. It contains definitions used by DOE and its contractors, and describes the current status and future implementation actions for the systems engineering work. It also identifies the commitments that DOE is making to the Board in this area. Section 3.0 addresses the program management aspects of 92-4, and likewise describes the current status and future implementing actions. It also identifies the commitments that DOE is making in the program management area. Section 4.0 provides reporting requirements associated with completing commitments identified in Recommendation 92-4. Section 5.0 describes the control of changes to this implementation plan. Attachment A is a glossary of terms used in the implementation plan, and Attachment B is a matrix listing commitments and deliverables made in the implementation plan.

Figure 1-1. Systems Engineering Approach.



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Table 1-1. Other DNFSB Recommendations Affected By 92-4.

90-2	Codes and Standards: Identification, Adequacy, and Implementation
90-3 & 90-7	Hanford Tank Monitoring
91-1	Codes and Standards Utilization
91-6	Radiation Protection
92-2	Facility Representative Program
92-5	Discipline of Operations
92-6	Operational Readiness Review
92-7	Training and Qualification
93-3	Improving the Technical Capability in Defense Nuclear Facilities Programs
93-5	Tank Waste Characterization

**92-4 IMPLEMENTATION PLAN
Revision 1****2.0 SYSTEMS ENGINEERING**

This section describes the Department's systems engineering effort to address Part 2 of the Board's Recommendation. Section 2.1 provides background information about the Hanford Site. Section 2.2 is an overview of the systems engineering implementation for the Hanford Site. Section 2.3 provides background information about the TWRS Program, and Section 2.4 is an overview of the systems engineering implementation for the TWRS program. Section 2.4 also includes a discussion about the application of systems engineering to new projects and the existing projects.

2.1 HANFORD SITE BACKGROUND

Decades of nuclear weapons production have left nuclear and chemical wastes, special nuclear materials, and irradiated fuel at the Hanford Site. These wastes include tank waste, contaminated soil and ground water, and contaminated facilities. It is necessary to safely operate many contaminated facilities that continue to store waste. The Hanford mission, therefore, includes promptly mitigating waste safety risks; safely operating remaining facilities; and cleaning up the Hanford Site in a safe, environmentally sound, and publicly acceptable manner.

2.2 SITE SYSTEMS ENGINEERING IMPLEMENTATION

In May 1993, the Hanford Site leadership decided to expand the TWRS systems approach for defining the technical baseline for the entire site. This effort was initiated with a workshop involving senior management from Westinghouse Hanford Company (WHC), Kaiser Engineers Hanford (KEH), and Pacific Northwest Laboratory (PNL). It was decided that WHC systems engineering should apply a site-wide, top-down systems analysis to identify, define, and integrate the site programs and projects. This effort will identify site-level cleanup system deliverables which, when assigned to the programs (including TWRS), will define the boundaries, interfaces, and requirements for the site programs.

Functional analysis, requirements analysis and allocation, architecture generation and evaluation, and requirements verification are described and managed through Systems Engineering Management Plans (SEMPs) and implementing procedures. The site, program, and project systems engineering efforts will continue through their life cycles to verify and monitor performance against requirements. Interface monitoring and management will be a key element in program and site integration and configuration control.

A site-level functional analysis was performed based upon the site mission as defined in the May 1993 workshop. A function which remediates waste contained in the single- and double-shell tanks was identified in this analysis.

A site requirements analysis was also performed and an approach for requirements allocation identified. Site mission requirements are being developed using the forms, quantities, and composition of the Hanford inventory.

As a basis for conducting program-level (including TWRS) systems engineering, a set of physical, site-wide, interface parameters is being developed. These parameters will utilize assumptions that are consistent with existing regulatory agreements and requirements. Major issues must still be resolved. Examples of these issues include defining acceptable cleanup standards and retention of land for long-term waste management. The Hanford Site Functional Analysis includes assumptions made regarding major site issues yet to be resolved.

The results of the above work are contained in the initial Site Systems Engineering Analysis documents (Commitment 2.2.a) and are being maintained in a computer data base. These documents are the Systems Engineering Functions and Requirements for the Hanford Cleanup Mission: First Issue, dated January 10, 1994, with Addendums 1, 2, and 3; Draft Architecture Synthesis Basis for the Hanford Cleanup System; and the Draft Systems Engineering Product Description Report for the Hanford Cleanup Mission.

Both the site-wide and TWRS analyses will be maintained as necessary to support the evolving technical baseline. Changes to these analyses will be reported in the appropriate quarterly status reports to be provided as part of this plan. Based on current efforts and the commitments of this plan, DOE and WHC will implement site systems engineering sufficient to begin developing the plans that will drive all programs at Hanford by March 31, 1995. A Systems Engineering Implementation Plan will be developed based on FY 1995 Multi-Year Program Plan (MYPP) logic and planning for the site. Updates of the MYPP for FY 1996 and beyond will include use of systems engineering in accordance with DOE policy to develop the underlying technical baselines. (Commitment 2.2.b).

Summary of Section 2.2 Commitments

Commitment 2.2.a: Complete initial Site Systems Engineering Analysis that identifies the site mission, mission requirements, interface parameters, initial synthesis of architectures, assumptions, major issues, and actions required to resolve assumptions.

Deliverable:

- (1) Draft Site Functions and Requirements (dated 1/10/94) and Addendums 1, 2, and 3
- (2) Draft Architecture Synthesis Basis for the Hanford Cleanup System
- (3) Draft Systems Engineering Product Description Report for the Hanford Cleanup Mission

Due Date: June 30, 1994 (Complete)

Commitment 2.2.b: DOE and WHC will implement site systems engineering sufficient to begin developing the plans that will drive all programs at Hanford.

Deliverable:

- (1) A Systems Engineering Implementation Plan will be developed based on FY 1995 Multi-Year Program Plan (MYPP) logic and planning for the site.

Due Date: November 15, 1994

- (2) Letter of direction to affected site participants to include use of systems engineering in accordance with DOE policy to develop the technical baselines that will be used as the basis for MYPP updates.

Due Date: March 31, 1995

2.3 TWRS BACKGROUND

The TWRS Mission has been defined as the following: "store, treat, and immobilize highly radioactive Hanford waste (current and future tank waste and the Sr/Cs capsules) in an environmentally sound, safe, and cost effective manner." Figure 2-1 illustrates the current definition of the TWRS program.

In November 1992, the TWRS Leadership Council decided to implement a systems approach to define the program technical baseline. At that time, several ongoing activities and projects had previously been defined for accomplishing the TWRS mission. Program participants recognized that there would be a time lag before the systems engineering work would catch up with the ongoing work. Based on considerations of the safety, legal, technical, cost, schedule, and political risks, the program leadership determined that it would be prudent to proceed with the ongoing activities in parallel with the systems engineering work.

The TWRS systems engineering work has matured to the point where it is now influencing the program direction. Within another year, the systems engineering work will have matured to the point where it will establish the technical basis for the entire program. Until that time, there continues to be risks associated with either continuing or terminating the ongoing projects. Additional program risks are associated with the series of enabling assumptions that have been made. The assumptions are necessary to allow progress on the technical baseline definition. These risks are being identified and managed by defining and completing required analysis through the systems engineering work.

Major TWRS systems (not necessarily equating one for one to projects) identified based on application of systems engineering include:

- Waste Retrieval System
- Waste Transfer System

- Pretreatment System
- High-Level Waste Immobilization
- Immobilized High-Level Waste Interim Storage System
- Low-Level Waste Immobilization and Disposal System
- Liquid Effluent System
- Solid Waste System.

Major TWRS projects identified prior to application of systems engineering include:

- Multi-Function Waste Tank Facility (MWTF)
- Initial Pretreatment Module (IPM)
- Hanford Waste Vitrification Plant (HWVP)
- Cross-Site Transfer System
- Aging Waste Transfer Line
- Tank 241-C-106 Sluicing
- Initial Tank Retrieval System (ITRS).

These projects may be included as part of the systems above. Continued systems engineering work will provide the requirements for the projects.

2.4 TWRS SYSTEMS ENGINEERING IMPLEMENTATION

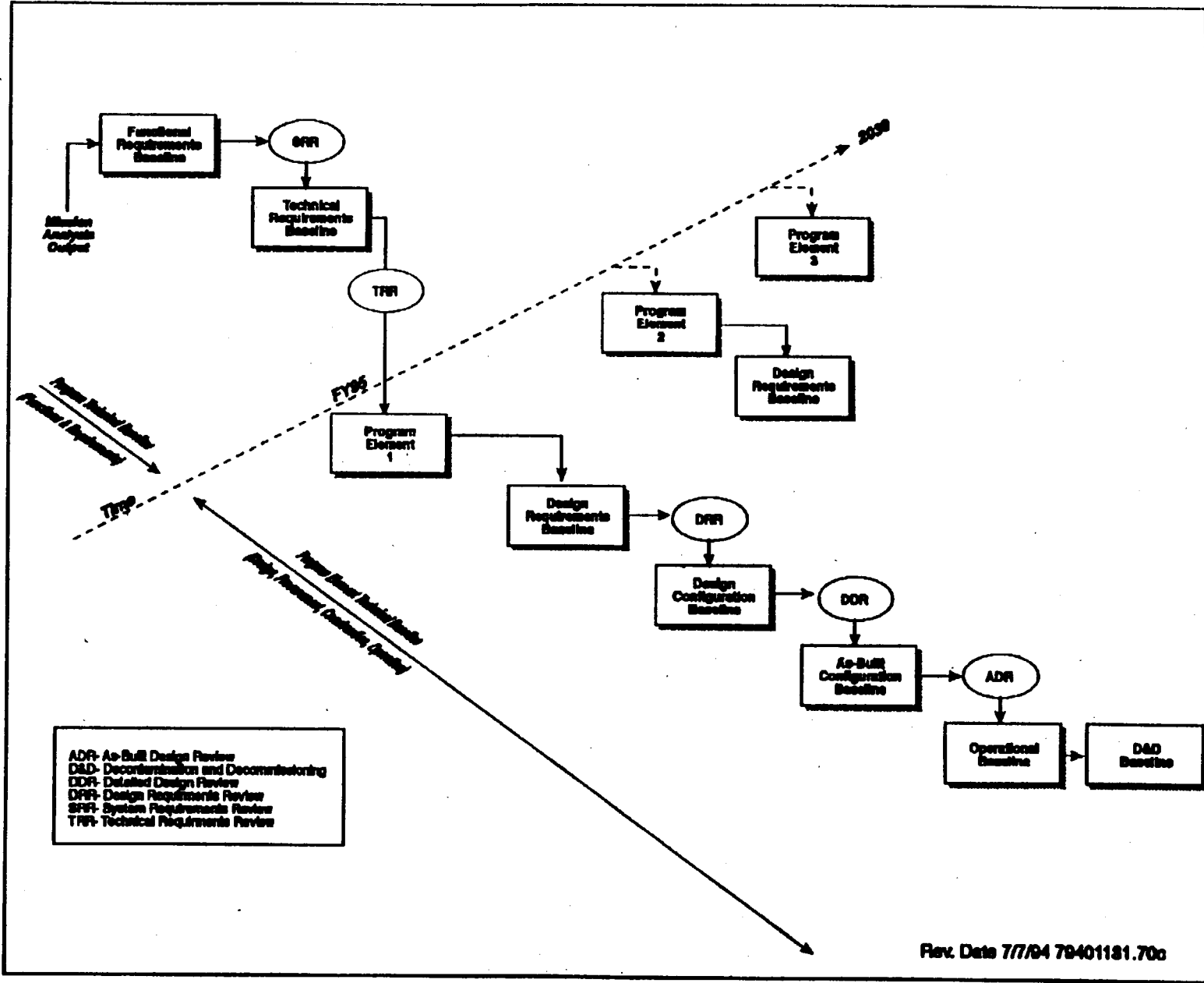
This systems engineering effort will meet Part 2 of the Board's recommendation and fully address the technical issues raised by the Board. The DOE and WHC will use the systems engineering approach to conduct Hanford technical activities. This approach will also be fostered at other DOE sites in the future.

A systems engineering approach is being applied to define the TWRS technical baseline. The baseline will evolve through the stages described in Table 2-1 and shown on Figure 2-2. The TWRS Systems Engineering Management Plan (SEMP) and the Systems Engineering Working Plan (SEWP) describe the baseline evolution. The TWRS SEMP and WHC SEWP may be combined into a single SEMP consistent with the pending guidance from the Richland Operations Office (RL) Systems Engineering Management Policy document (Annex to the TWRS Management Systems Description -- see Section 3.0).

Table 2-1. Technical Baseline Evolution.

Baseline	Site Functions & Requirements Baseline	TWRS Functions & Requirements Baseline	TWRS Technical Requirements Baseline	Project Design Requirements Baseline	Design Configuration Baseline	AS-BUILT Configuration (Operations, D&D, & Disposal)
Reviews	Site Requirements Review	System Requirements Review	Technical Requirements Review	Design Requirements Review	Detailed Design Review	As-Built Design Review Operational Readiness Review D&D Review
Products	Site Level Functions and Requirements Document Baseline Program Description or Program Mission Analyses Interface Control Document(s) Logistics	TWRS Level Functions and Requirements Document Baseline System Description Logistics	TWRS Level Technical Requirements Specification(s) Updated Baseline System Description Interface Control Documents Logistics	Project Level Design Requirements Documents Functions and Operational Requirements Project Concept Document Interface Control Documents Technology Development Information Process Requirements Support Requirements Logistics Plan	Project Level Verified Design Construction Plan Product Specification Process Specification Interface Control Drawings Demonstration and Documentation of System Safety Analysis Reports	Plant Level As-built Design Drawings Operating Procedures Maintenance Procedures Safety Analysis Reports Operational System Support Environment Deployed System System Ready for Deactivation Deactivated System
Objectives	Establish basis for Site-wide planning Establish basis for program identification Establish program interfaces	Establish agreement between DOE-RL & MEO Contractor on top-level TWRS system functions & requirements Establish basis for TWRS planning Establish TWRS interfaces	Establish baselined functions & requirements between system level and projects Establish basis for projects identification Establish project interfaces	Establish basis for preliminary & final design Establish basis for project-level planning Reach agreement between DOE-RL and the MEO Contractor on the project definition	Establish basis for procurement, construction, installation, acceptance testing Provide a producible design that meets requirements	Establish basis for operations, decontamination and decommissioning

Figure 2-2. Technical Baseline and Verification.



Dates for the development, review, and issue of the technical baseline documents are contained in the TWRS Multi-Year Work Plan (MYWP). Progress will be reported quarterly as discussed in Section 4.0.

The initial systems engineering analysis for TWRS has established the top-level technical framework for the program and its projects to support the TWRS and site missions. This analysis integrates the ongoing site systems engineering results to ensure TWRS remains technically consistent with, and traceable to, the Hanford mission and site-level requirements. Interfaces between TWRS and the other site programs will be confirmed or adjusted as the site systems definition evolves.

A preliminary functional analysis of TWRS was completed and transmitted to the WHC projects department on January 18, 1994. This report formed the basis for the recommendations from the projects standdown reviews. The recommendations were contained in a report that was provided to the Board (see Section 2.4.2). The preliminary functional analysis was included in the TWRS Functions and Requirements Document, which was submitted to DOE for approval on March 31, 1994.

The Functional Requirements Baseline was subjected to a WHC-sponsored System Requirements Review in February 1994. The DOE has committed to sponsor an independent System Requirements Review of this material (see Section 2.4.2.1)

The TWRS Functions and Requirements Document identifies top-level program requirements that will be allocated to the projects and that must be satisfied by the project designs. The potential requirements source documents include applicable safety requirements such as Federal and State Laws, DOE orders, DOE Nuclear Safety Policy (SEN-35-91), and Consensus Codes and Standards.

DOE Order 1300.2A requires that all DOE facilities, programs, and projects use non-government standards in their design, construction, testing, modification, operation, decommissioning, decontamination, and remediation where such standards are adequate and appropriate for the intended application. Where standards do not exist or where existing standards do not suffice, appropriate DOE standards shall be developed and adopted.

Standards to be used will be identified as part of the requirements identification process. Additional standards will be invoked as the specific designs are developed. Standards, when incorporated into the authorization basis, i.e., those aspects of the facility design basis and operational requirements relied upon by DOE to authorize operations, will be considered as requirements. At the current level of the analysis, these requirements are not discriminating factors in the definition of the system. As functions and architectures become more design specific, standards will be evaluated for applicability and invoked where appropriate. The timing of these activities and the level where specific standards and codes appear in the analysis will vary according to the functions and implementing architectures. This work

will be performed with the participation of cognizant representatives in the functional areas being analyzed.

The TWRS program-level systems engineering analysis will continue through the Technical Requirements Baseline development. The functions, requirements, and architecture analyses will continue to the level where a series of projects can be defined. The analyses will be documented in the Technical Requirements Specification(s), Interface Control Documents, and an updated Baseline System Description. This baseline documentation will be subjected to a DOE-sponsored Technical Requirements Review by March 31, 1995 (see Section 2.4.2.1).

The TWRS technical baseline will continue to evolve to the Design Requirements Baseline. This baseline will involve development of Design Requirements Documents (DRDs) and Project Functions and Operational Requirements. A DRD will be produced for each major TWRS project, both newly defined projects and ongoing projects. Beyond this point, the evolution of the technical baseline diverges for the newly defined projects and for the ongoing projects. Within the implementation plan, Sections 2.4.1 and 2.4.2 summarize the systems engineering approach for new projects and ongoing projects, respectively.

2.4.1 New Projects

A DRD will be provided to each project team. The document will be based on the top-level program systems engineering results. Based on the DRD, the project team will develop a Functions and Operational Requirements Document for each project. These documents will be provided to an architect and engineering firm as the basis for design, construction, and startup of the projects. For each new project, the baseline will continue to evolve as depicted in Figure 2.2 and described in the TWRS SEMP.

2.4.2 Tailoring for Existing Projects

Several of the projects initiated prior to application of systems engineering are in various stages of design, and there are risks associated with continuing these projects. The risks include, but are not limited to:

- The projects might not be needed (as currently defined) to accomplish the TWRS mission.
- The projects might be under-sized or over-sized for the current program definition.
- The projects might not satisfy all of the requirements identified by the systems engineering work.

- The projects might be built to satisfy non-requirements identified prior to the systems engineering work.
- The projects might be built too soon or too late to satisfy the program needs.

The TWRS program management is responsible for weighing the risks and consequences, and making informed decisions about the project activities. These projects are in various stages of design and represent large expenditures of funds. The risk of proceeding with the projects before the top-down systems engineering is completed must be evaluated.

The TWRS systems engineering effort must quickly validate or modify the design bases of the existing projects to minimize the risk identified above. The TWRS systems engineering analyses will identify the need and define the boundaries, interfaces, and requirements for the ongoing TWRS projects, including MWTF.

To improve risk management for the existing projects, the systems engineering information has been provided to the project teams as it evolved. An initial systems engineering analysis (Draft TWRS Functions and Requirements Document - October 1993) of the functions and top-level requirements for TWRS was completed (Commitment 2.4.a). A second, more detailed TWRS top-level functions and requirements analysis (Report of Systems Engineering Work-In-Progress - January 18, 1994) was completed (Commitment 2.4.b).

The initial systems engineering analysis was the basis for the project standdown reviews that are described in Section 2.4.2.2. Results from the TWRS functional and top-level requirements analysis were used to confirm the project needs, boundaries, interfaces, and design bases. Initial decisions to proceed, delay, or redefine the TWRS projects were based on this information. Section 2.4.2.1 describes the DOE plans for implementing systems engineering in the ongoing TWRS projects.

2.4.2.1 Systems Engineering Implementation for Existing Projects

This section describes the general TWRS approach for performing disciplined technical reviews for the ongoing projects, and the specific commitments for MWTF and the other projects. This approach will provide the formal introduction of systems-based requirements into the project. This section also describes the DOE plans for satisfying the commitments made by the Secretary of Energy in her August 15, 1994, letter to the Board.

The DOE will perform an independent top-level systems requirement review of the TWRS Program to validate system requirements and enabling assumptions for the MWTF and other ongoing projects. This review, which is scheduled for completion by January 31, 1995, will cover the analyses of the top four levels

levels as described in the TWRS Functions and Requirements Document (Commitment 2.4.c). DOE will sponsor an independent Technical Requirements Review by March 31, 1995 (Commitment 2.4.d). This review will cover the analyses and information described in the Technical Requirements Specifications.

A DRD will be provided for each of the ongoing projects. A Functions and Operational Requirements document will only be prepared if the project has not progressed into detailed design. The existing project baseline documentation will be compared to the DRDs by the TWRS Program line organizations. The review will be used to determine if the project satisfies the functions and requirements identified by the program analyses. The results of the baseline comparisons will be documented in reports that will be used for the in-depth Independent Design Reviews. The project scope and design will be modified as necessary to comply with the program-level requirements.

Independent Design Reviews will be used to ensure the projects being built satisfy the program operational requirements. The scope of the Independent Design Reviews will include, but will not be limited to, the project's status, quality assurance, safety analysis (where available), assessment of the adequacy of the design based on required design and interface requirements, and application of codes and standards. These reviews will be sponsored by DOE and conducted in accordance with TWRS systems engineering policy described in Section 3.7. The reviews will be conducted by panels composed of qualified personnel external to the project being reviewed and may include recognized experts in the field external to TWRS.

The MWTF DRD will be issued by July 31, 1995, and the baseline comparison will be completed by September 30, 1995 (Commitment 2.4.e). The Independent Critical Design Review will be held prior to initiation of MWTF construction. The Board will be briefed at the conclusion of the Review (Commitment 2.4.f).

For the MWTF, these reviews will include reexamining fundamental questions such as: (1) What are the primary functions of the tanks? (2) What are their fundamental design features? (3) How many (and what size) new tanks are needed? (4) When are they needed?

For the other ongoing projects, the DRDs and technical baseline comparisons will be available according to the following schedule:

W-028, Aging Waste Transfer Line	November 30, 1995
W-058, Cross-Site Transfer Line	November 30, 1995
W-211, Initial Retrieval Demonstration	November 30, 1995
W 236B, Initial Pretreatment Module	November 30, 1995

These comparisons will be documented in reports that will be made available to the Board (Commitments 2.4.g through 2.4.j).

The life-cycle phase each project is in when its Design Requirements document is available will determine the type of Independent Design Review that will be performed. At a minimum, the critical design reviews will be performed prior to initiation of construction. The schedule for the Independent Design Reviews for each ongoing project will be available by January 31, 1995 (Commitment 2.4.k).

2.4.2.2 Project Standdown Reviews

In an effort to better manage the program risks, a series of project standdown reviews were performed for the following TWRS projects (Commitment 2.4.1):

- Multi-Function Waste Tank Facility (MWTF)
- Initial Pretreatment Module (IPM)
- Cross-Site Transfer System
- Aging Waste Transfer Line
- Tank 241-C-106 Sluicing
- Initial Tank Retrieval System (ITRS).

On October 25, 1993, in accordance with the recent modifications to the Tri-Party Agreement, DOE (with concurrence from the State of Washington Department of Ecology) directed WHC to:

- Terminate all construction and procurement activities associated with the HWVP Canister Storage Building (CSB).
- Continue construction of the HWVP Office Building with related supporting site utilities.
- Ramp down the current HWVP design media to a condition sufficient (only) to maintain the capability to reactivate, staff up, and initiate construction rapidly.

With these actions taken, a standdown review was not conducted for the HWVP and CSB.

At the time the project standdown reviews were performed, these TWRS projects had the following missions:

- MWTF will provide new double-shell tanks for dilution and storage of waste removed from other tanks that have priority safety issues.
- IPM will pretreat waste to remove cesium and possibly destroy organic and ferrocyanide species, eliminating some major safety issues.
- The Cross-Site Transfer System will provide replacement transfer lines between the East and West Tank Farm Areas.
- The Aging Waste Transfer Line Project will provide new transfer capability between the A and B Tank Farms and will connect the tanks to HWVP.
- The Tank 241-C-106 Sluicing project will demonstrate retrieval of waste from a single-shell tank and mitigate the high-heat safety issue.
- The ITRS will add mixer pump retrieval systems to 10 of 28 existing double-shell tanks.

Project standdown reviews were performed on each project to determine the degree to which project activities should continue until justified by the results of the top-down systems engineering work. Each standdown review consisted of the following criteria:

- Compliance with SEN-35-91 and the Secretary of Energy's TWRS Safety Initiatives, including applicable safety requirements and how they are specified in the design.
- Identification of applicable DOE orders as they pertain to the design and consensus codes and standards, and how they are specified in the design.
- Identification of safety-related systems, design adequacy, and how their configuration will be controlled.
- Adequacy of technology development efforts in meeting project needs.
- Identification of missing requirements and verification of assumptions that require resolution.

After evaluating each project against these requirements, the standdown review panel documented its findings in a report to the WHC Executive Vice President for Tank Waste Remediation. On January 13, 1994, a summary letter report was completed and submitted to the Board summarizing the results of the reviews and indicating any actions to terminate or redirect projects, including MWTF (Commitment 2.4.m).

Standdown reviews were conducted by RL and WHC Project staff. Schedule constraints limited the scope and depth of the reviews. Not all program participants accepted the review conclusions. Additional reviews, including independent reviews, are planned for ongoing projects as discussed in Section 2.4.2.1.

Summary of Section 2.4 Commitments

Commitment 2.4.a: Complete an initial systems engineering analysis.

Deliverable: Initial TWRS Systems Analysis Report reflecting the systems engineering work done to October 31, 1993

Due Date: October 31, 1993 (Complete)

Commitment 2.4.b: Provide functional analysis report that contains results of systems engineering work in progress through December 30, 1993. This report contains the TWRS mission, preliminary functions and functional block diagrams, and preliminary requirements.

Deliverable: TWRS Preliminary Functional Analysis Report

Due Date: January 18, 1994 (Complete)

Commitment 2.4.c: Perform an independent Top-Level TWRS System Requirements Review to validate system requirements and enabling assumptions.

Deliverable: TWRS Top-Level System Requirements Review Report

Due Date: January 31, 1995

Commitment 2.4.d: Perform a program-level Technical Requirements Review.

Deliverable: TWRS Technical Requirements Review Report

Due Date: March 31, 1995

Commitment 2.4.e: Compare the MWF DRD and existing baseline documentation for consistency.

Deliverable: MWF Baseline Comparison Report

Due Date: September 30, 1995

Commitment 2.4.f: Perform an in-depth, Independent Critical Design Review for MWF. Brief the Board on the design bases and project-level assumptions, and on their compatibility with program-level functional requirements.

Deliverable: MWF Independent Critical Design Review Report

Due Date: Prior to start of MWF construction

Commitment 2.4.g: Compare the Aging Waste Transfer Line DRD and existing baseline documentation for consistency.

Deliverable: Aging Waste Transfer Line Baseline Comparison Report

Due Date: November 30, 1995

Commitment 2.4.h: Compare the Cross-Site Transfer Line DRD and existing baseline documentation for consistency.

Deliverable: Cross-Site Transfer Line Baseline Comparison Report

Due Date: November 30, 1995

Commitment 2.4.i: Compare the Initial Retrieval Demonstration DRD and existing baseline documentation for consistency.

Deliverable: Initial Retrieval Demonstration Baseline Comparison Report

Due Date: November 30, 1995

Commitment 2.4.j: Compare the Initial Pretreatment DRD and existing baseline documentation for consistency.

Deliverable: Initial Pretreatment Baseline Comparison Report

Due Date: November 30, 1995

Commitment 2.4.k: Provide a schedule for the Independent Design Reviews for each ongoing project.

Deliverable: The scheduled dates for each review

Due Date: January 31, 1995

Commitment 2.4.l: Complete project standdown reviews to determine extent to which each listed TWRS project should continue until justified by systems engineering analysis.

Deliverable: Summary Report for each Standdown Review

Due Date: January 1994 (Complete)

**92-4 IMPLEMENTATION PLAN
Revision 1****3.0 PROGRAM MANAGEMENT**

Addressing Part 1 of the Board's recommendation will be accomplished by improvements in the DOE and contractor organizations, and upgrades to program management systems. This section describes the Department's organizational improvements and provides an overview of the project management systems upgrade efforts.

3.1 ORGANIZATIONAL REALIGNMENT

On May 23, 1993, the Assistant Secretary for Environmental Management took formal action to realign the DOE and contractor reorganizations at Hanford and their contractual relationships. This new organizational strategy views DOE as "Owner," WHC as "Design Authority," and architect/engineers as "Design Agents." This strategy enhances accountability and reduces confusion regarding reporting and directing relationships. This organizational realignment is complete.

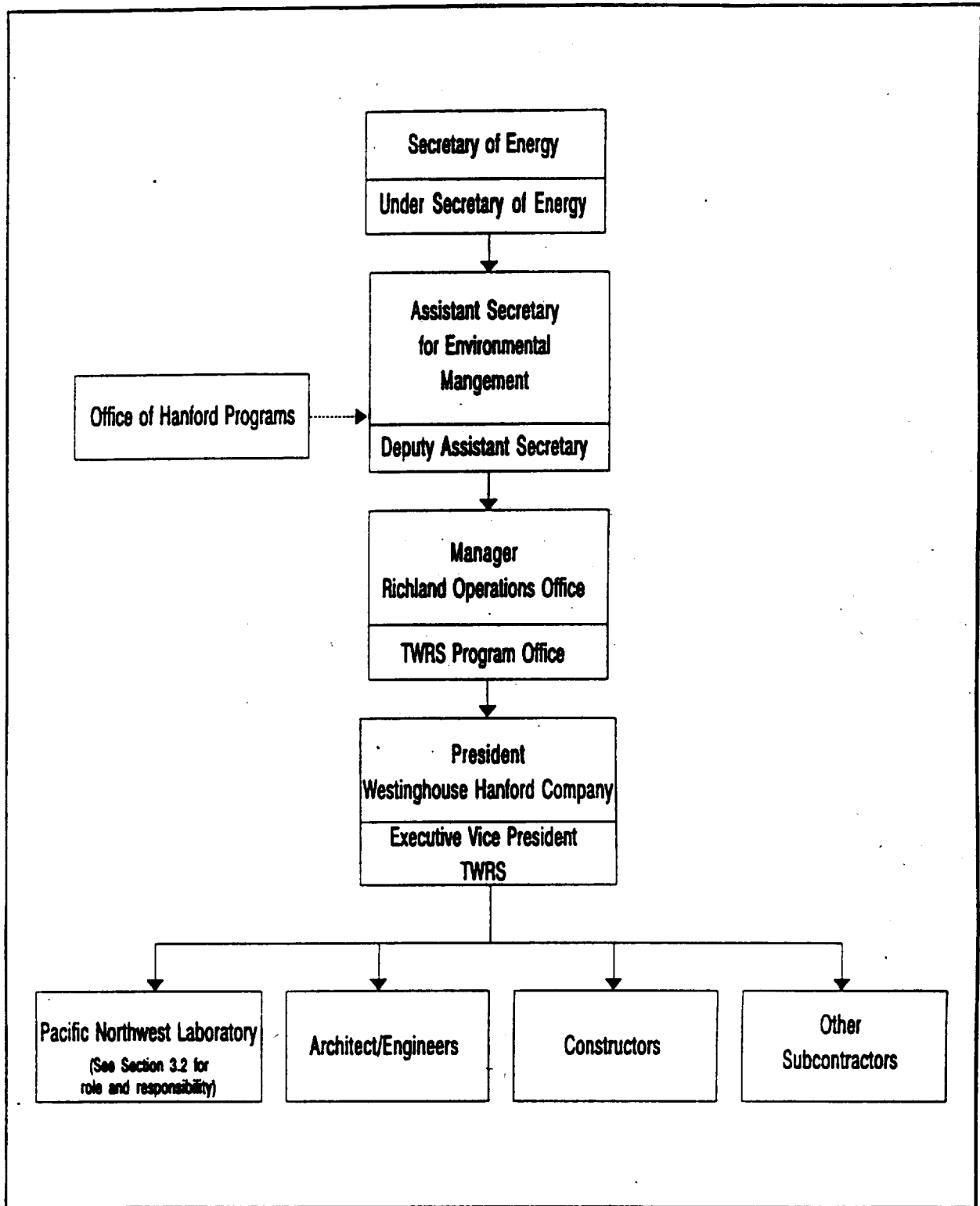
Figure 3-1 delineates the TWRS organization from DOE-HQ down through the TWRS projects. (Organizational branches outside the TWRS line responsibility have been omitted for clarity.) This figure shows that a clear line of responsibility and accountability exists and flows down from the Secretary of Energy, through the Assistant Secretary for Environmental Management, the Deputy Assistant Secretary for Waste Management, the Richland Operations Office Manager, the WHC President and the WHC Executive Vice President for TWRS, continuing down into the TWRS management organization. By making WHC responsible for ensuring compliance with top-level requirements and being the single source of technical direction, the management organization is more streamlined and efficient.

If the M&O contractor changes in the future, technical continuity will be maintained by negotiating the technical baseline documents into the contracts to "anchor" the technical requirements regardless of contractor. In addition, a reasonable transition phase and a specific transition plan will be required for contractor changeover for both the incumbent and future contractors.

The TWRS program is currently reorganizing, and new roles and responsibilities are being developed. The revised organization will be described in the TWRS Management Systems Description (MSD) and will include:

- Organizational structure
- Specific roles and responsibilities, and requisite authority to accomplish those responsibilities
- Description of the interface relationships between DOE, the projects, and the contractor organizations

Figure 3-1. TWRS Lines of Authority.



- Descriptions and functional assignments for technology development efforts and the relationship to the TWRS program.

Comparable information at the site level will be incorporated into the Site Management System. The TWRS MSD will be developed as discussed in Section 3.6. Project summaries of this information will be appended to the MSD as required.

3.2 REDEFINITION OF ROLES AND RESPONSIBILITIES

As the Owner, DOE is responsible for establishing site and program policy, and defining the Hanford Mission and programmatic requirements and objectives in conformance with DOE orders and commercial nuclear industry standards. DOE monitors and provides oversight of the Design Authority, and evaluates and approves changes to the project configurations.

As the Design Authority and M&O Contractor, WHC has primary responsibility for executing the Hanford Mission. This includes defining systems through systems engineering, managing programs and projects, providing the sole source of technical direction to the Design Agents (architect/engineers), reviewing and approving Design Agent products and activities, and ensuring that the top-level requirements defined by DOE are met.

As the Design Agents, the architect/engineers design the facilities and systems in accordance with specified requirements and direction from WHC. The architect/engineers ensure that the products comply with the appropriate codes and standards.

The constructors build the facilities, install systems and components, modify, deactivate, and dispose of facilities, and turn over completed and accepted facilities to WHC for operation. The architect/engineers continue to support facility operations.

As the M&O contractor, WHC has primary responsibility for the technical content and operational activities within programs and projects at the Hanford Site. WHC operations personnel will therefore be well-integrated early into the design process.

As new technology needs of the TWRS program are identified by WHC and communicated to the Pacific Northwest laboratory (PNL), PNL will be tasked by WHC to:

1. Develop a technology development program including candidate technology alternatives to be considered for review and approval by WHC.
2. Conduct the lead role for the development of those elements of the technology program approved by WHC.
3. Provide technical support to WHC through scale-up and implementation of the technologies to operational states.

The active involvement and formal relationships between PNL and WHC program and project organizations is intended to ensure that:

(a) technology development activities are integrated into and responsive to the WHC-defined TWRS program and projects, (b) technology development efforts by PNL keep pace with the programs and projects, and (c) WHC and PNL have the same mission concerning the TWRS.

In accordance with these roles and responsibilities, an Integrated Technology Plan (ITP) was developed for the TWRS program and will be approved by WHC. The ITP is the technology development document that describes the technology planning for the TWRS. WHC, as Design Authority, establishes integrated technology requirements in the ITP. PNL provides technology products that meet WHC requirements defined in the ITP. This plan identifies the key technology development issues which are outstanding, the schedules and resources required to resolve them, what technology development is actually being done, who is doing it, and the organizational arrangements that have been established to foster this unified approach for the TWRS program. The ITP will be updated annually (Commitment 3.2.a).

Summary of Section 3.2 Commitments

Commitment 3.2.a: Prepare an Integrated Technology Plan (ITP) that describes the technology planning for the TWRS; identifies key technology development issues; and identifies the technology development work, schedules, costs, and responsibilities.

Deliverable: TWRS Integrated Technology Plan

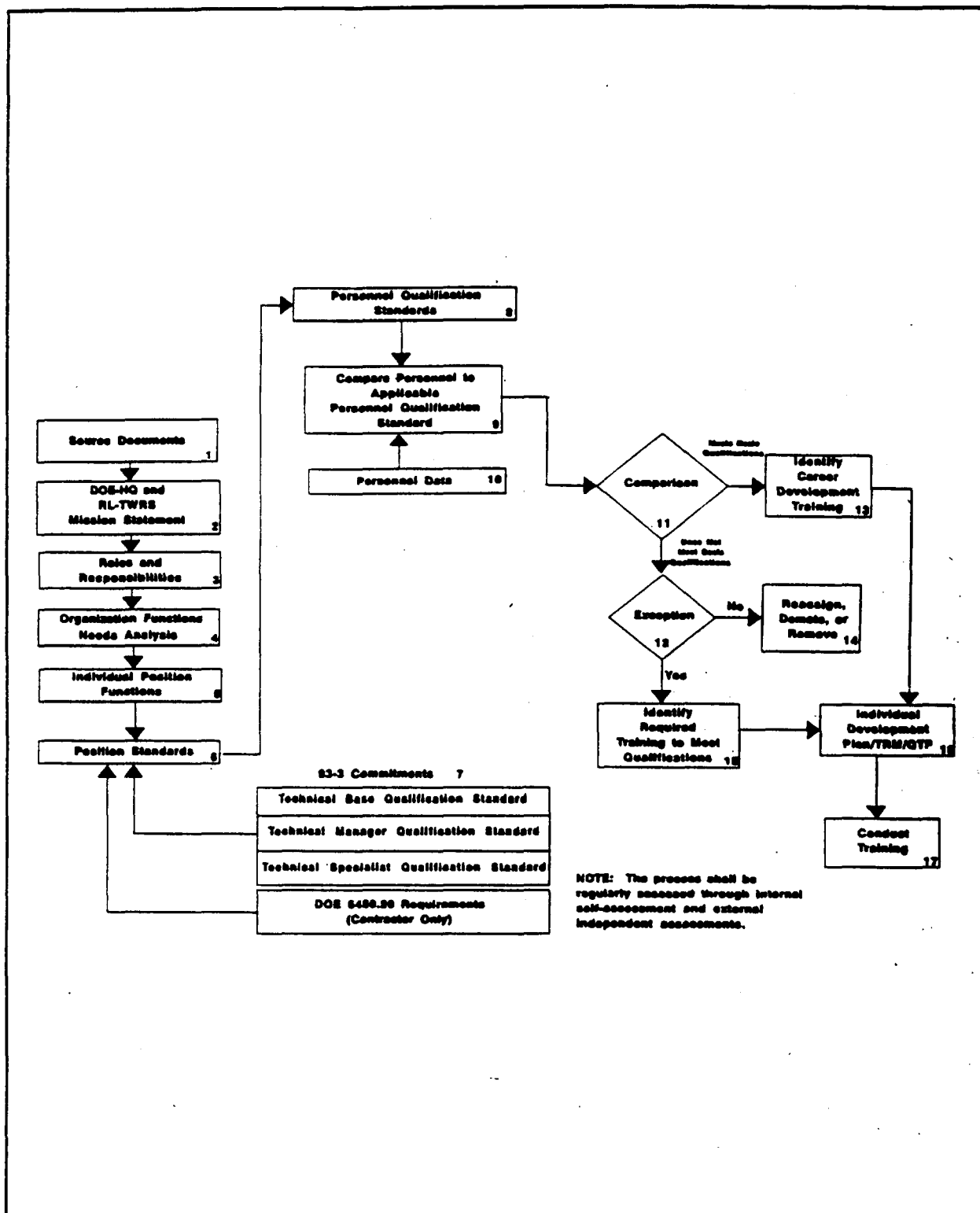
Due Date: June 10, 1994 (Complete)

3.3 STAFFING, QUALIFICATION, AND TRAINING

The primary purpose of the TWRS staffing, qualification, and training process is to ensure that TWRS management and technical staff are qualified and competent to perform the functions and activities required of their positions. The process will provide for a documented mechanism for determining what qualification and training requirements each employee is required to attain prior to the performance of all job activities that may affect safety, health, quality, or the environment. The process will also be designed to give senior management a mechanism for recognizing and rewarding outstanding performance, as well as to train, reassign, demote, or remove staff who do not meet minimum selection standards. The basic process is pictorially described in Figure 3-2 "TWRS Staffing Qualification and Training Process."

The TWRS staff qualification and training process described in this 92-4 Implementation Plan has been coordinated with other Departmental initiatives being conducted in response to (DNFSB) Recommendation 93-3. Where appropriate in the following discussion, 93-3 Implementation Plan commitments regarding staff qualification and training of Departmental personnel are referenced. Additionally, activities conducted under the DNFSB Recommendation 93-3 Implementation Plan will develop guidance for the development and implementation of the staff qualification and training process to be utilized

Figure 3-2. Staffing Qualification and Training Process.



for DOE TWRS. This process will also include the requirements of DOE Order 5700.6C, Criterion 2, "Personnel Training and Qualification." TWRS personnel consists of DOE-HQ TWRS, DOE-RL TWRS, and TWRS contractor personnel. In some cases, DOE-RL and RL contractors will need to develop facility specific processes, tailored to RL, to implement the guidance specified in the policies developed under corresponding 93-3 initiatives.

The staff qualification and training process will include the design and development of technical management and staff personnel qualification standards based upon an analysis of job performance requirements and the subsequent identification of required supporting knowledge, skills, and competencies. These standards will include the basic requirements for education, experience, orientation training, job-specific training, career development, continuing training, and performance evaluation criteria.

On June 30, 1994, the Department issued a document entitled "Professional Development of Federal Technical Personnel" to meet a DOE 93-3 Implementation Plan initiative. This document provides guidance for development of the Department's Federal technical personnel involved with defense nuclear facilities and includes requirements for the management; development; implementation; evaluation; and documentation of training, education, and qualification programs.

DOE-RL Office of Training (OTR) will formalize the staff qualification and training process consistent with the guidance provided in "Professional Development of Federal Technical Personnel" (Federal employees), and DOE Order 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities" (contractors), by October 31, 1994 (Commitment 3.3.a). The documents developed by RL-OTR will provide guidance to RL TWRS for their staff qualification and training program requirements.

The Department, in its DOE 93-3 Implementation Plan Commitments 4.4.2, 4.4.3, and 4.4.4, has committed to developing a General Technical Base Qualification Standard, a Technical Manager Qualification Standard, and Technical Specialist Qualification Standards. Personnel Qualification Standards developed for DOE TWRS personnel will be compared to these 93-3 requirements, upon their issuance, to ensure the TWRS qualification standards meet or exceed the 93-3 Qualification Standards. Table 3-1 reflects the relationships between the 92-4 and 93-3 Implementation Plan commitments.

Staff Analyses are being conducted and documentation developed by DOE TWRS to determine required staffing levels and position qualifications. Each organization will determine the appropriate qualification requirements that include education, experience, training, and special requirements to be included in Personnel Qualification Standards for all DOE TWRS positions within their respective organizations.

The requirements defined in the Personnel Qualification Standards will be based on Technical Qualification Standards developed by the Department in DOE 93-3 Implementation Plan commitments, other site/job specific requirements, DOE Order 5480.20, Position Standards, and input from subject matter experts. These Personnel Qualification Standards will be used as the basis for assessing whether each employee meets or does not meet the basic

Table 3-1. 92-4 and 93-3 Qualification and Training Commitment Comparison.

92-4 Ref	Action	HQ	RL	WHC	93-3 Ref
3.3.a	Formalize Staff Qualification and Training Process		10/31/94		4.3 6/30/94 Complete
3.3.b	Formalize Performance-Based Training Development Process		10/31/94		4.3 6/30/94 Complete
3.3.c	Formalize Training Assessment Process		10/31/94		5.8 6/30/94 Complete
3.3.d	Independent External Assessment of Staff Qualification and Training by Institutionally Recognized Experts.		10/21/94		6.1 9/30/94
3.4.a	HQ TWRS (EM-36) Preliminary Staff Analysis	3/31/94 Complete			
3.4.b	RL TWRS Preliminary Staff Analysis		8/26/94 Complete		
3.4.c	HQ TWRS (EM-36) Individual Development Plans	Preliminary 5/31/94 Complete Final 10/31/94			4.2.1 10/31/94
3.4.d	RL TWRS Individual Development Plans (TRMs)		10/31/94		4.2.1 10/31/94
3.4.e	RL TWRS Management System Orientation		10/31/94		
3.4.f	HQ TWRS (EM-36) Management System Orientation	10/31/94			
	DOE Technical Base Qualification Standards				4.4.2 8/31/94
	DOE Technical Manager Qualification Standards				4.4.3 10/31/94
	DOE Technical Specialists Qualification Standards				4.4.4 12/31/94
3.4.g	Compare Preliminary Position Qualification Standards to 93-3 Technical Qualification Standards and Finalize Staff Analysis	Ref 93-3	Ref 93-3		4.4.5 12/31/94
3.4.h	Complete Required Technical Training	10/31/95	8/31/95		4.5 12/31/95
3.5.a	WHC TWRS Staff Analysis			1/27/95	
3.5.a	WHC TWRS Position Standards			1/27/95	
3.5.b	WHC TWRS Individual Qualification and Training Plans			2/28/95	
3.5.c	WHC TWRS Selection Process			3/17/95	

qualification requirements necessary to competently perform their assigned duties. The Personnel Qualification Standards will establish the selection/hiring requirements of personnel assigned to each TWRS position, based on position, job category, and reporting level. Personnel will be matched to the positions in the selection process based on Personnel Qualification Standards and their individual qualifications.

RL-OTR will formalize the Hanford standard for developing a systematic approach to training (performance-based) based on Departmental guidance developed under the DNFSB 93-3 Implementation Plan, by October 31, 1994 (Commitment 3.3.b). This guidance will be the basis for the RL-TWRS performance-based training process.

To ensure the effectiveness and efficiency of the staff qualification and training process, DOE TWRS will provide for assessment of the process on a yearly basis. Where possible, the DOE TWRS efforts will use the lessons learned from the 93-3 Implementation Plan regarding training assistance teams (93-3 Commitment 5.8), external assessments (93-3 Commitment 6.1), and compliance reviews (93-3 Commitment 4.1.4). RL-OTR will formalize the site-specific processes for the evaluation and assessment of qualification and training processes by October 31, 1994. (Commitment 3.3.c).

The methodology for assessment of qualification and training shall include internal self-assessment of RL TWRS, as well as independent external assessments by institutionally recognized experts. Such assessments will be conducted as early as practical in the process to ensure timely and candid feedback to management. The first independent assessment will be completed utilizing DRAFT RLIP 5480.EVL, "Guidelines for the Evaluation of Hanford Training Programs" and the DOE Technical Standard, "Guidelines for the Evaluation of Nuclear Facility Training Program" (DOE-STD-1070-94) by October 21, 1994 (Commitment 3.3.d).

Summary of Section 3.3 Commitments

Commitment 3.3.a: Formalize the DOE-RL and Hanford Contractor staff qualification and training process to identify requirements for personnel selection, orientation training, initial training, career development, continuous training, and performance evaluation.

Deliverable: DOE-RL and Hanford Contractor Staff Qualification and Training Process (Consistent with 93-3, Commitment 4.3)

Due Date: October 31, 1994

Commitment 3.3.b: Develop Hanford standard for systematic approach (performance-based) to training that incorporates guidance defined in 93-3 Implementation Plan and includes requirements of DOE Order 5700.6C, Criterion 2, "Personnel Training and Qualification."

Deliverable: Hanford Performance-Based Training and Qualification Process (Ref: 93-3 Commitment 4.3)

Due Date: October 31, 1994

Commitment 3.3.c: Formalize the DOE-RL qualification and training assessment process, including internal self-assessments and external independent assessments.

Deliverable: DOE-RL Qualification and Training Evaluation and Assessment Process

Due Date: October 31, 1994

Commitment 3.3.d: Conduct an independent external assessment of the RL and WHC TWRS qualification and training process by institutionally recognized experts.

Deliverable: Report of Independent Assessment of RL and WHC TWRS Qualification and Training Process

Due Date: October 21, 1994

3.4 DOE TWRS

The TWRS Staff Analysis will require an analysis of the TWRS mission and functions to determine the roles and responsibilities of the TWRS program. Functional analysis techniques will be applied to develop the organization of personnel that will best fulfill the needs of the system. The analysis will identify the roles and responsibilities of each position within the organization.

For each position, duties and corresponding competencies will be identified. Generic competencies will be developed in the Position Standards for the TWRS divisions and/or groups. These generic competencies and qualifications will be modified to reflect specific TWRS program responsibilities resulting in Personnel Qualification Standards. Once competencies and qualifications are identified, the Training Requirements Matrix (TRM) will be created. This matrix will define the required training for each position. Each organization will then conduct an assessment of each individual's abilities in comparison to the competencies identified for each position to determine the training development needs. The training development needs will then become the backbone of the Individual Development Plans (IDPs) as documented in the TRMs.

The resulting IDPs will serve as an agreement between the employee and supervisor to better identify technical training expectations as well as career development requirements.

Finalizing the DOE TWRS Staff Analysis will require the completion of Personnel Qualification Standards. These Standards cannot be completed until Department Qualification Standards required by the 93-3 Implementation Plan Commitments 4.4.2, 4.4.3, and 4.4.4 have been completed. However, DOE-HQ (EM-36) and DOE-RL TWRS have taken substantial steps in anticipation of the 93-3 qualification standard development to develop interim qualification requirements and training needs.

The DOE-HQ (EM-36) and DOE-RL TWRS Preliminary Staff Analysis has been completed (Commitments 3.4.a and 3.4.b). This analysis has resulted in organizational changes that best meet the needs and functions of the TWRS program. Additionally, Preliminary IDPs for HQ TWRS were completed May 31, 1994. Finalized IDPs for HQ TWRS are required to be complete by October 31, 1994 (Commitment 3.4.c). RL TWRS IDPs (Training Requirements Matrix [TRMs]) will be complete by October 31, 1994 (Commitment 3.4.d).

The HQ TWRS and RL TWRS Final Staff Analysis including Position Standards and Personnel Qualification Standards will be completed by reviewing the DOE 93-3 Technical Qualification Standards, when issued. Position Qualification Standards developed for HQ TWRS and RL TWRS personnel will be compared to these 93-3 requirements to ensure TWRS qualification standards meet or exceed the 93-3 Qualification Standards. (Commitment 3.4.g).

TWRS Orientation designed to familiarize all DOE-HQ (EM-36) and DOE-RL TWRS technical management and staff with the TWRS Management System Requirements will be in place and orientation sessions initiated by October 31, 1994, for all currently assigned personnel. New RL TWRS employees (assigned to TWRS program after October 31, 1994) will receive the TWRS Orientation Training as soon as is practicable, but no later than 6 months following their assignment to the TWRS program. New DOE-HQ (EM-36) employees will complete the TWRS Orientation training within one year of establishing their IDPs (Commitments 3.4.e and 3.4.f).

In accordance with the DOE-93-3 Implementation Plan, the DOE Technical Base Qualification Standard, Technical Specialist Qualification Standards, and Technical Manager Qualification Standard will specify the required technical and managerial competencies and base qualification requirements necessary to provide guidance, direction, and oversight of the contractors. HQ TWRS (EM-36) and RL TWRS will compare the 93-3 standards to the TWRS Personnel Qualification Standards and the Position Standards. The Final Staff Analysis developed under this implementation plan will be completed following receipt of the 93-3 Implementation Plan Qualifications Standards. The Final Staff Analysis will include the above comparison results.

Once the IDPs (TRMs for RL) have been developed, the required technical training will be initiated to ensure the proper technical development of HQ TWRS and RL TWRS personnel. This training will be accomplished utilizing the performance-based approach to training (Commitment 3.4.h). Required technical training will be completed no later than one year following completion of the IDPs (TRMs for RL).

Summary of Section 3.4 Commitments

Commitment 3.4.a: Perform and document a Preliminary Staff Analysis of DOE-HQ (EM-36) personnel assigned to perform technical tasks related to the TWRS program.

Deliverable: DOE-HQ (EM-36) Preliminary Staff Analysis Report

Due Date: March 31, 1994 (Completed)

Commitment 3.4.b: Perform and document a Preliminary Staff Analysis of RL TWRS personnel assigned to perform technical tasks related to the TWRS program.

Deliverable: RL TWRS Preliminary Staff Analysis Report

Due Date: August 26, 1994 (Completed)

Commitment 3.4.c: Develop Individual Development Plans (IDPs) for DOE-HQ (EM-36) personnel assigned to perform technical tasks related to the TWRS program. These IDPs will identify required and career development training.

Deliverable: DOE-HQ (EM-36) IDPs

Due Date: October 31, 1994 (Preliminary completed May 31, 1994)

Commitment 3.4.d: Develop Individual Development Plans (IDPs) (Training Requirements Matrix [TRMs]) for RL TWRS personnel assigned to perform technical tasks related to the TWRS program. These TRMs will identify required training, career development, and continuous training.

Deliverable: RL TWRS IDPs (Training Requirements Matrix [TRMs])

Due Date: October 31, 1994.

Commitment 3.4.e: Familiarize all presently assigned RL TWRS technical management and staff personnel with the TWRS Management System Requirements Orientation training.

Deliverable: RL TWRS Orientation Report documenting status and initiation of orientation

Due Date: October 31, 1994

Commitment 3.4.f: Familiarize HQ (EM-36) technical management and staff personnel with TWRS Management System Requirements through Orientation training.

Deliverable: HQ (EM-36) Orientation Report documenting status and initiation of orientation

Due Date: October 31, 1994

Commitment 3.4.g: Prepare the Final Staff Analysis including comparison of EM-36 and RL-TWRS Position Standards to DOE 93-3 Implementation Plan Qualification Standards.

Deliverable: Final Staff Analysis Documentation

Due Date: 90 days after delivery of 93-3 4.4.2, 4.4.3, 4.4.4 Qualification Standards

Commitment 3.4.h: Completion of required technical training of HQ (EM-36) and RL TWRS technical management and staff personnel consistent with requirements of Individual Development Plans (IDPs) (Training Requirements Matrix [TRMs] for RL).

Deliverable: Report documenting completion of required technical training identified in IDPs and TRMs

Due Date: One year from completion of IDPs and TRMs (August 31, 1995 for RL TRMs and October 31, 1995 for EM-36 IDPs)

3.5 TWRS CONTRACTORS

The WHC TWRS staffing qualification and training program will be the process pictorially represented in Figure 3-2. The Staff Analysis is a quantitative and qualitative assessment of the required staff necessary to accomplish the TWRS mission and functions. Organizational changes needed to best accomplish the system functions will be addressed in the Staff Analysis. A WHC TWRS Staff Analysis will be completed by January 27, 1995 (Commitment 3.5.a). WHC will complete the Position Qualification Standards for the technical managerial and staff positions by January 27, 1995 (Commitment 3.5.a).

The WHC TWRS Qualification and Training Plans (QTPs) will be completed by February 28, 1995 (Commitment 3.5.b). Each Individual QTP will specify the Selection Requirements (education, experience, training, and special requirements), Initial Training Program, Continuing Training Program, and Performance Evaluation requirements. The QTPs will emphasize not only fundamentals, but also the enhancement of skills and practices necessary to fully implement a systematic approach to training. Personnel selection shall be based on the Position Qualification Standards. A qualification assessment shall be performed to verify that each technical manager and staff meets or does not meet the basic minimum qualification requirements. This assessment shall include the education, experience, training, and special requirements needed to fulfill the Individual Qualification Standards. Employees failing to meet minimum qualifications will be trained, reassigned, demoted, or removed. DOE Order 5480.20 and RLID 5480.20 (when issued) will be utilized as the basis for program requirements and for the selection of personnel to be completed by February 28, 1995. A report will be prepared and submitted by March 17, 1995 (Commitment 3.5.c).

Where significant employee training is deemed necessary, WHC TWRS will ensure that those employees obtain the required training as soon as practicable, but prior to performing affected tasks. All WHC TWRS employees will complete the required training within one year of establishing their QTP.

Supplemental project-specific QTPs will also be prepared for designated personnel, and will be applicable to those WHC and subcontract personnel assigned to specific TWRS projects. Completion of project-specific QTPs will be the responsibility of the respective WHC project management teams in conjunction with the Technical Training organization. Project-specific QTPs will be completed in advance of any new project initiation.

Summary of Section 3.5 Commitments

Commitment 3.5.a: WHC TWRS will complete a quantitative and qualitative assessment of the required staff necessary to accomplish the TWRS mission and functions. This will include the completion of Position Qualification Standards for designated technical managers and staff.

Deliverable: WHC TWRS Staff Analysis

Due Date: January 27, 1995

Deliverable: WHC Position Qualification Standards

Due Date: January 27, 1995

Commitment 3.5.b: WHC TWRS will specify individual position selection requirements (education, experience, and special requirements), initial and continuing training, and performance evaluation requirements.

Deliverable: WHC TWRS Individual Qualification and Training Plans

Due Date: February 28, 1995

Commitment 3.5.c: WHC TWRS will complete the selection of personnel based on Individual Qualification Standards.

Deliverable: WHC TWRS Selection Process Report documenting status and completion

Due Date: March 17, 1995

3.6 PROGRAM MANAGEMENT SYSTEMS

A Site Management Plan (SMP) was promulgated in August 1992. DOE, WHC, and other contractors are upgrading their program management systems to implement the organization strategy and guide systems engineering and program management. The SMP essentially described development and implementation of the Site Management System (SMS) and its Directives. Site resources are being directed toward completion, implementation, and use of the SMS. No further update of the SMP is needed or planned; therefore, copies of the SMS directives will be made available to the Board as they are approved by the RL Manager. (Commitment 3.6.a).

In accordance with DOE agreements, the TWRS Program will be managed as a Major System Acquisition - Program. This approach implements the management control concepts of DOE Order 4700.1, Project Management System, as modified to suit large, complex programs such as TWRS. In this approach, the TWRS Program Management Plan consists of two key documents: the Multi-Year Work Plan (MYWP) and the Management System Description (MSD).

The TWRS MSD contains the policies and requirements that must be applied to successfully develop and implement the integrated management systems for the TWRS Program. These management systems include the following major management areas:

- Program Management
- Systems Engineering Management
- Configuration Management
- Baseline Management
- Quality Assurance and Safety.

Each management system will be governed by DOE documents that promulgate policy and direction in the identified management areas. The management policies and requirements will be generally identified in the MSD with more detailed definition and direction provided to the program participants in a series of annexes to the MSD document. For the TWRS Program, the TWRS MSD and its annexes will be issued by November 30, 1994 (Commitment 3.6.b).

WHC will respond to the TWRS MSD and its annexes through issuance of a TWRS Management Plan specifically describing how WHC will implement the MSD Management Systems policies and requirements (Commitment 3.6.c).

The management processes covered by the above referenced policies and requirements will be periodically assessed by implementation of the TWRS Total Quality Management Policy (Ref: DOE Order 5700.6C, Criterion 10 - Independent Assessments).

Summary of Section 3.6 Commitments

Commitment 3.6.a: Complete Management System Directives that provide direction and policy for implementing the Hanford Site Management System.

Deliverable: Hanford Site Management System Directives

Due Date: July 12, 1994 (Complete - Updates expected through February 1, 1995)

Commitment 3.6.b: Complete a description of the management systems and associated policies that will be used to manage the TWRS Program.

Deliverable: TWRS Management Systems Description Document and Policy Annexes

Due Date: November 30, 1994

Commitment 3.6.c: WHC complete a schedule for responding to the RL TWRS Management Systems Description document in terms of a WHC TWRS Management Plan and other associated WHC documents as applicable.

Deliverable: Schedule for development and issuance of the WHC TWRS Management Plan and associated documentation

Due Date: December 30, 1994 (Planned for 30 days after issuance of the TWRS Management Systems Description + Policy Annexes -- Ref: Commitment 3.6.b)

3.7 SYSTEMS ENGINEERING MANAGEMENT

TRW Inc., as part of an ongoing TWRS Systems Engineering support effort, conducted an evaluation of the applicability of aerospace-developed standards for system engineering (MIL-STD-499B) and technical reviews (MIL-STD-1521). The evaluation provided a correlation between what the military standards require and what is being met by existing DOE standards. A written report was provided to WHC (Commitment 3.7.a).

Consistent with discussion in Section 3.6, TWRS RL is developing a policy for the application of systems engineering to the TWRS Program. This policy is being formulated based on reviews of DOE 4700.1, MIL-STD-499B, MIL-STD-1521, EIA Engineering Bulletin SYSB-1, and knowledge of the DOE's approach to systems engineering and the traditional Department of Defense (DOD) approach to systems engineering. DOE-RL will perform an analysis comparing the systems engineering approach defined by the TWRS policy to the current DOE and DOD approaches. A letter report summarizing that analysis will be provided October 31, 1994 (Commitment 3.7.b).

DOE-FM (Office of the Associate Deputy Secretary for Field Management) will perform a review of the DOD systems engineering and design review standards, and will prepare a report on how lessons learned are being incorporated into TWRS systems engineering and into higher-level DOE directives, such as DOE Order 4700.1 (Commitment 3.7.c). It is expected that a DOE Order 4700 Review Draft will be issued in six to nine months. The rewrite of DOE Order 4700 is expected to foster the systems engineering approach at other DOE sites.

The WHC systems engineering management will be described in SEMP's and implemented by procedures. A Draft Site SEMP was completed on March 31, 1994 (Commitment 3.7.d). An updated Draft Site SEMP was issued June 30, 1994, to meet the commitment to the Board and to be available for external review. Issuance of the Final Site SEMP is dependent upon the extent and timing of the external review (Commitment 3.7.e). Sitewide draft procedures will be developed by February 14, 1995 (Commitment 3.7.f).

A TWRS SEMP was submitted to RL for approval on March 31, 1994 (Commitment 3.7.g). Based on this SEMP, WHC prepared a systems engineering working plan (SEWP) to provide more detailed plans for implementing the systems engineering process. Required implementing procedures are being identified. TWRS procedures based on the March 31, 1994, issue of the SEMP will be modified or added as necessary (Commitment 3.7.h). Application of new

standards may require modification of these procedures or additional procedures. When the RL policy has been finalized and is transmitted to WHC for implementation, WHC will review the SEMP and the SEWP relative to the RL-derived standards and revise them to be consistent with the policy. Application of the new policy has the potential to affect some of the prior systems engineering commitments and may require modification of the implementing procedures or additional procedures. Any proposed changes to the commitments in this Implementation Plan will be communicated to the Board in accordance with Section 5.0.

The TWRS SEMP will be modified to incorporate the systems engineering and design review standards that are currently being developed. These standards will be included in the Systems Engineering Policy Annex to the Management Systems Description. The TWRS SEMP will be revised and issued (Commitment 3.7.1). The SEMP will cover the entire program and project life cycles from need identification to deactivation and disposal. A key element of the process addresses requirements identification, including safety requirements imposed by law, Safety Initiatives, SEN-35-91, DOE orders, and applicable consensus codes and standards. The methods of identifying and documenting safety-related systems and components will also be included. Comprehensive technical reviews will be defined in the Systems Engineering Management Policy Annex and the SEMP to ensure that engineering products are verified and that all requirements are reflected in those products.

Assessment of technical; environment, safety, and health (ES&H); and economic risk will be described in the SEMP. Various types of technical risk will be considered (e.g., technology maturity and compatibility). These risks will be part of the decision criteria used when selecting technologies and design approaches. In addition, ES&H risks associated with the design, selection, and operations of systems and components will be an essential part of the systems engineering requirements development and the design processes. Comprehensive design verification, with emphasis on verifying that all aspects of the systems design will meet ES&H requirements, will be used to minimize risk. Other Programmatic criteria will also be used for decision making, such as stakeholder inputs and economic analyses (e.g., life-cycle cost, value engineering). At no time will ES&H be compromised due to programmatic considerations.

Definitive risk management policies are being developed and will be referenced or included in the SEMP when they are complete. Until the policies and associated methods are implemented in the TWRS and site-wide procedures, risks will be evaluated qualitatively based on extensive site experience available through various technical disciplines and ES&H organizations.

Summary of Section 3.7 Commitments:

Commitment 3.7.a: WHC, through TRW, Inc., conduct an evaluation of the applicability of aerospace-developed standards for systems engineering (MIL-STD-499B) and technical reviews (MIL-STD-1521), and correlate these standards to existing DOE standards.

Deliverable: TWRS Industry/Government Standards Review Report

Due Date: December 14, 1993 (Complete)

Commitment 3.7.b: TWRS-RL will compare the systems engineering approach defined by the systems engineering policy to the current DOE and DOD approaches.

Deliverable: A letter report summarizing this analysis will be provided to the Board

Due Date: October 31, 1994

Commitment 3.7.c: DOE-FM (Office of the Associate Deputy Secretary for Field Management) will perform a review of the Department of Defense (DOD) systems engineering and design review standards, and will prepare a report on how lessons learned are being incorporated into TWRS systems engineering and into higher-level DOE directives, such as DOE Order 4700.1.

Deliverable: DOE-FM Report on DOD Systems Engineering Standard Review

Due Date: March 31, 1995

Commitment 3.7.d: Prepare and issue a Draft Site Systems Engineering Management Plan (SEMP).

Deliverable: Draft Site Systems Engineering Management Plan

Due Date: March 31, 1994 (Complete -- Updated June 30, 1994)

Commitment 3.7.e: Update the Draft Site Systems Engineering Management Plan (SEMP), allow for external review, and issue as a final document under document control.

Deliverable: Final Site Systems Engineering Management Plan

Due Date: Pending completion of External Review. (The Draft Site SEMP was updated June 30, 1994, and made available for external review.)

Commitment 3.7.f: Develop and issue a set of Draft Site SEMP Implementing Procedures.

Deliverable: Draft Site SEMP Implementing Procedures

Due Date: February 14, 1995

Commitment 3.7.g: WHC prepare and issue a Draft TWRS Systems Engineering Management Plan (SEMP).

Deliverable: Draft TWRS Systems Engineering Management Plan

Due Date: March 31, 1994 (Complete)

Commitment 3.7.h: WHC prepare and issue procedures for implementing the TWRS Systems Engineering Management Plan (SEMP).

Deliverable: TWRS SEMP Implementing Procedures

Due Date: Schedule for deliverable will be submitted in response to the RL TWRS Management System Description and Policy Annexes -- Ref: Commitment 3.6.c

Commitment 3.7.i: WHC revise and issue the TWRS Systems Engineering Management Plan (SEMP) to incorporate systems engineering standards and policy contained in the RL TWRS Management Systems Description and Policy Annexes.

Deliverable: Revised TWRS SEMP

Due Date: Schedule for deliverable will be submitted in response to the RL TWRS Management System Description and Policy Annexes -- Ref: Commitment 3.6.c

3.8 CONFIGURATION MANAGEMENT

A Draft TWRS Configuration Management Plan was developed by WHC and issued for review on January 31, 1994 (Commitment 3.8.a). It described technical configuration control within the TWRS program. The intent of the plan was to form the basis for developing lower-level implementation documents and procedures. This complete set of documentation will be developed as the program evolves. A Configuration Management Policy Annex to the Management System Description will be issued by October 7, 1994 (Ref: Commitment 3.6.b).

The Draft WHC TWRS Configuration Management Plan will be revised and issued as part of the WHC response to the policy annexes as described in Section 3.6 (Ref: Commitment 3.6.c).

Summary of Section 3.8 Commitments

Commitment 3.8.a: WHC prepare and issue a Draft TWRS Configuration Management Plan that describes technical configuration control within the TWRS program.

Deliverable: Draft TWRS Configuration Management Plan

Due Date: January 31, 1994 (Complete)

3.9 BASELINE MANAGEMENT

An integrated approach to site, program, and project baseline planning is being implemented to ensure that baselines reflect the systems engineering work that must be managed. TWRS baselines will be in place by September 30, 1994, as part of the TWRS Multi-Year Work Plan (Commitment 3.9.a). Baseline Management is described in the Site Management System documents and the TWRS Business Management Plan. For each project, a total project baseline will be established for all activities through completion of the project, based on program needs and commitments established in TWRS and subtier documentation. The project baselines will be provided in

time to support the project needs. The total baseline includes the technical work scope, schedule, and cost baselines.

Changes to project baselines will be controlled through submittal and approval of change requests. Change control will be in accordance with the site-wide and TWRS program change control procedures. Change boards for specific projects will be established to review and act on the proposed change requests. Levels of control will vary depending on the size and complexity of each project, and may be more stringent than program-level controls. Details of the change control process for each project and program will be documented in the MSD and its applicable annexes. (Ref: Commitment 3.6.b).

Summary of Section 3.9 Commitments

Commitment 3.9.a: Prepare and issue the TWRS work scope, schedule, and cost baselines.

Deliverable: TWRS Multi-Year Work Plan

Due Date: September 30, 1994

3.10 QUALITY ASSURANCE AND SAFETY

The MSD contains a series of annexes that provide specific definition and direction to program participants (Ref: Section 3.6). The annexes applicable to this section include Total Quality Management, Health and Safety Management, and Systems Engineering Management. These annexes embed quality and safety into the culture and processes used throughout the TWRS Program.

Of particular interest to the Board is that the goal of the safety management policies is to enhance and protect the nuclear and radiological safety of the public and workers at the Hanford Site in accordance with DOE policies, orders, and requirements with special emphasis on engineered features.

The policies and requirements contained in the Health and Safety Management Annex, in conjunction with the policies and requirements contained in the Systems Engineering Annex, will concentrate on the safety bases of the program and projects. Particular attention will be paid to details of how the following critical elements of safety are managed:

- Safety Analyses
- Technical Safety Requirements
- Control of Unreviewed Safety Questions
- Limiting Conditions of Operations.

Other aspects of the Health and Safety Management Annex will include a discussion of radiological protection; emergency preparedness; conduct of operations; notification, investigations, and reporting of occurrences; personnel training and qualification; audits and surveillance; trending and

safety performance; issues management; and records management and reporting.

The TWRS Quality Management Policy Annex and the Health and Safety Management Policy Annex will be issued by November 30, 1994. (Commitments 3.10.a and 3.10.b, respectively).

During FY 1992, the DOE issued three DOE orders for safety compliance:

- 5480.21 Unreviewed Safety Questions
- 5480.22 Technical Safety Requirements
- 5480.23 Nuclear Safety Analysis Reports

On August 20, 1993, WHC issued an implementation plan for these orders. The WHC Implementation Plan discusses and references current technical safety requirements (TSRs) for existing TWRS facilities. Limiting Conditions of Operations are contained within the TSRs. The plan also discusses the Interim Safety Basis (ISB) documentation strategy for single-shell and double-shell tank farms.

Summary of Section 3.10 Commitments

Commitment 3.10.a: Prepare a policy document that will embed a total quality culture and processes throughout the TWRS Program.

Deliverable: TWRS Total Quality Management Policy Annex
(Ref: Commitment 3.6.b)

Due Date: November 30, 1994

Commitment 3.10.b: Prepare a document that will describe TWRS safety management policies, enhance and protect the nuclear and radiological safety and health of the public and workers, and embed a safety culture into the TWRS Program.

Deliverable: TWRS Health and Safety Management Policy Annex
(Ref: Commitment 3.6.b)

Due Date: November 30, 1994

**92-4 IMPLEMENTATION PLAN
Revision 1****4.0 REPORTING REQUIREMENTS**

The DOE will prepare quarterly reports updating the progress and significant accomplishments made in implementing the 92-4 Implementation Plan. The quarterly reports will contain discussions on the various initiatives described in this plan. The report will address the issue and requirements in the plan, highlight ongoing efforts, review completion dates and upcoming milestones, discuss the upcoming quarter's activities, and note any concerns.

Responsibility:

The RL Program Manager for the TWRS will have the primary responsibility for developing quarterly reports, with assistance from the Management and Operating Contractor.

Commitment 4.a: Provide quarterly status of the 92-4 Commitments to the Board that includes highlights of work, deliverables made, forecasts, and concerns.

Deliverable: Quarterly Progress Reports

Due Date: December 30, 1994 (First Report for 92-4 Implementation Plan, Revision 1 -- quarterly thereafter)

The last report will be submitted within 3 months following completion of the last commitment contained in this plan.

**92-4 IMPLEMENTATION PLAN
Revision 1**

5.0 IMPLEMENTATION PLAN CHANGE CONTROL

The 92-4 Implementation Plan is a complex and long-range plan. Flexibility is needed to address changes in commitments, actions, or completion dates where modifications are necessary due to additional information, project refinements, or changes in DOE's baseline assumptions.

Purpose:

To provide a change control process to handle implementation course corrections or process change.

Discussion:

The 92-4 Implementation Plan is based on certain assumptions. These assumptions were used to develop commitment dates. If outyear significant funding, FTE level, or mission changes occur, the original date for commitments may require modification. Any planned changes in these commitments or completion dates will be promptly brought to the attention of the Board prior to the passing of the completion date. Changes in scope of the implementation plan should be approved by Headquarters and signed by the Secretary, and changes in implementation plan schedule without scope changes should be approved by Headquarters and signed by the Assistant Secretary. These changes will be formally discussed in the quarterly progress reports including appropriate corrective actions, and where appropriate, submitted to the Board as a revision to the implementation plan.

Commitment 5.a: Formally submit planned changes to a 92-4 Commitment or Commitment Due Date. Changes in scope of the implementation plan should be approved by Headquarters and signed by the Secretary, and changes in implementation plan schedule without scope changes should be approved by Headquarters and signed by the Assistant Secretary. Revise implementation plan and resubmit as mutually agreed upon with the Board.

Deliverable: Revised 92-4 Implementation Plan

Due Date: As Required

Commitment 5.b: Provide notification of potential planned changes to commitments or due dates in the Quarterly Status Reports.

Deliverable: Discussions in Quarterly Progress Reports (Ref: Commitment 4.a)

Due Date: As Required in conjunction with the Quarterly Progress Report Schedule

ATTACHMENT A

List of Acronyms and Abbreviations

ARES	Advanced Research and Engineering Sciences
CSB	Canister Storage Building
DOE	Department of Energy
DOD	Department of Defense
DRD	Design Requirements Document
FFBD	Functional Flow Block Diagram
FTE	Full Time Equivalent
HQ	DOE Headquarters
HWVP	Hanford Waste Vitrification Plant
IDP	Individual Development Plan
IPM	Initial Pretreatment Module
ISB	Interim Safety Basis
ITP	Integrated Technology Plan
ITRS	Initial Tank Retrieval System
KEH	Kaiser Engineers Hanford
M&O	Management and Operating
MSD	Management System Description
MWTF	Multi-Function Waste Tank Facility
MYWP	Multi-Year Work Plan
OTR	Office of Training (DOE-Richland Operations Office)
PNL	Pacific Northwest Laboratory
QTP	Qualification and Training Plan
RL	DOE Richland Operations Office
SEMP	Systems Engineering Management Plan
SEWP	Systems Engineering Work Plan

SEN	Secretary of Energy Notice
SMP	Site Management Plan
TRM	Training Requirements Matrix
TSR	Technical Safety Requirement
TWRS	Tank Waste Remediation System Program
WHC	Westinghouse Hanford Company

DELIVERABLE/COMMITMENT

Rev 1
Section

Commitment/Deliverable

Rev 1
Date

SITE-WIDE COMMITMENTS

2.2.a	(1) Draft Site Functions and Requirements (dated 01/10/94) and Addendums 1, 2, and 3 (2) Draft Architecture Synthesis Basis for the Hanford Cleanup System (3) Draft Systems Engineering Product Description Report for the Hanford Cleanup Mission	06/30/94 (Complete)
2.2.b	(1) Systems Engineering Implementation Plan based on FY 1995 Multi-Year Program Plan (MYPP) logic and planning for the site (2) Letter of direction to affected site participants to include use of systems engineering in accordance with DOE policy to develop the technical baselines that will be used as the basis for MYPP updates	11/15/94 03/31/95
3.6.a	Hanford Site Management System Directives	07/12/94 (Complete) Updates thru 02/01/95
3.7.d	Draft Site Systems Engineering Management Plan (SEMP)	03/31/94 (Complete)
3.7.e	Final Site Systems Engineering Management Plan (SEMP)	Pending Completion of External Review
3.7.f	Draft Site SEMP Implementing Procedures	02/14/95

TWRS PROGRAM COMMITMENTS

2.4.a	Initial TWRS Systems Analysis Report reflecting the systems engineering work done to 10/31/93	10/31/93 (Complete)
2.4.b	TWRS Preliminary Functional Analysis Report	01/18/94 (Complete)
2.4.c	TWRS Top-Level Systems Requirements Review Report	1/31/95
2.4.d	TWRS Technical Requirements Review Report	03/31/95
3.2.a	TWRS Integrated Technology Plan (ITP)	06/10/94 (Complete)
3.3.a	DOE-RL and Hanford Contractor Staff Qualification and Training Process (Consistent with 93-3, Commitment 4.3)	10/31/94
3.3.b	Hanford Performance-Based Training and Qualification Process (Ref: 93-3 Commitment 4.3)	10/31/94
3.3.c	DOE-RL Qualification and Training Evaluation and Assessment Process	10/31/94

B-1

ATTACHMENT B: 92-4 PRODUCT/COMMITMENT SCHEDULE (Sheet 1 of 3).

DOE/RL-94-115

ATTACHMENT B: 92-4 PRODUCT/COMMITMENT SCHEDULE (Sheet 2 of 3).

DELIVERABLE/COMMITMENT
Commitment/DeliverableRev 1
DateRev 1
Section

Rev 1 Section	Commitment/Deliverable	Rev 1 Date
3.3.d	Report of Independent Assessment of RL and WHC TWRS Qualification and Training Process	10/21/94
3.4.a	DOE-HQ (EM-36) Preliminary Staff Analysis Report	03/31/94 (Complete)
3.4.b	RL TWRS Preliminary Staff Analysis Report	08/26/94 (Complete)
3.4.c	DOE-HQ (EM-36) Individual Development Plans (IDPs)	10/31/94
3.4.d	RL TWRS IDPs (Training Requirements Matrix [TRM])	10/31/94
3.4.e	RL TWRS Orientation Report documenting status and initiation of orientation	10/31/94
3.4.f	HQ (EM-36) Orientation Report documenting status and initiation of orientation	10/31/94
3.4.g	Final Staff Analysis Document	90 days after 93-3 Qualification Standards Delivery
3.4.h	Report documenting completion of required technical training identified in IDPs and TRMs	RL: 08/31/95 HQ (EM-36): 10/31/95
3.5.a	WHC TWRS Staff Analysis	01/27/95
3.5.a	WHC Position Qualification Standards	01/27/95
3.5.b	WHC TWRS Individual Qualification and Training Plans (QTPs)	02/28/95
3.5.c	WHC TWRS Selection Process Report documenting status and completion	03/17/95
3.6.b	TWRS Management Systems Description (MSD) document and Policy Annexes	11/30/94
3.6.c	Schedule for development and issuance of the WHC TWRS Management Plan and associated documentation	12/30/94
3.7.a	TWRS Industry/Government Standards Review Report	12/14/93 (Complete)
3.7.b	A letter report summarizing the SE Comparison Analysis	10/31/94
3.7.c	DOE-FM Report on DOD Systems Engineering Standard Review	03/31/95
3.7.g	Draft TWRS Systems Engineering Management Plan	03/31/94 (Complete)
3.7.h	TWRS SEMP Implementing Procedures Schedule	Included in Commitment 3.6.c
3.7.i	Revised TWRS SEMP Schedule	Included in Commitment 3.6.c

ATTACHMENT B: 92-4 PRODUCT/COMMITMENT SCHEDULE (Sheet 3 of 3).

DELIVERABLE/COMMITMENT
Commitment/Deliverable

Rev 1
Date

Rev 1
Section

3.8.a	Draft TWRS Configuration Management Plan that describes technical configuration control within the TWRS program	01/31/94 (Complete)
3.9.a	TWRS Multi-Year Work Plan	09/30/94
3.10.a	TWRS Total Quality Management Policy Annex. (Ref: Commitment 3.6.b)	11/30/94
3.10.b	TWRS Health and Safety Management Policy Annex (Ref: Commitment 3.6.b)	11/30/94
TWRS PROJECT COMMITMENTS		
2.4.e	MWTF Baseline Comparison Report	09/30/95
2.4.f	MWTF Independent Critical Design Review Report	Prior to Start of Construction
2.4.g	Aging Waste Transfer Line Baseline Comparison Report	11/30/95
2.4.h	Cross-site Transfer Line Baseline Comparison Report	11/30/95
2.4.i	Initial Retrieval Demonstration Baseline Comparison Report	11/30/95
2.4.j	Initial Pretreatment Baseline Comparison Report	11/30/95
2.4.k	Scheduled dates for each Project Independent Design Review	01/31/95
2.4.l	Summary Report for each Standdown Review	01/13/94 (Complete)
92-4 CONTINUING COMMITMENTS		
4.a	Quarterly Progress Reports	12/30/94 and Quarterly thereafter
5.a	Revised 92-4 Implementation Plan	As Required
5.b	Discussions in Quarterly Progress Reports (Ref: Commitment 4.a)	As Required