



The Secretary of Energy
Washington, DC 20585

February 4, 1993

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W.
Washington, D.C. 20004

Dear Mr. Conway:

In accordance with Public Law 100-456, section 315, I am enclosing the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 92-4, Multi-Function Waste Tank Facility Project at the Hanford Site. The previous Secretary, Admiral Watkins, accepted this Recommendation on August 28, 1992, and subsequently requested a 45-day extension for submittal of the Implementation Plan by February 4, 1993. The Department forwards this Implementation Plan in compliance with statutory requirements.

The enclosed Implementation Plan was chiefly prepared under the leadership of my predecessor. My administration will work responsively with the Board in addressing this and other Recommendations accepted by the Department, and I pledge that the Department's response to this and future Recommendations through Implementation Plans will fully and adequately address the concerns identified by the Board.

As the Board reviews and evaluates the enclosed Implementation Plan, we will be pleased to work with you and your staff in addressing any discontinuities or shortfalls which may be identified in your review of our plan.

Sincerely,

A handwritten signature in black ink, appearing to read "Hazel R. O'Leary".

Hazel R. O'Leary
Secretary

Enclosure

IMPLEMENTATION PLAN FOR DNFSB RECOMMENDATION 92-4

MULTI-FUNCTION WASTE TANK FACILITY HANFORD SITE

Tank Waste Remediation System

The Multi-Function Waste Tank Facility (MWTF) is a FY 1993 Congressional line item construction project (Project 93-D-183). The MWTF, together with the Initial Pretreatment Module (IPM) (Project 91-D-171), are the two components of the Multi-Function Waste Remediation Facility (MWRF) which is intended to resolve Hanford tank safety issues, beginning with the safety issues associated with Tank 101-SY. Of the identified safety issues (e.g., periodic release of flammable gasses, ferrocyanide, organics and high-heat generation), periodic venting of flammable gasses from Tank 101-SY requires mitigation and resolution as soon as possible. The MWRF is one of the many line-item construction projects in the Tank Waste Remediation System (TWRS).

Many of the current Hanford Tank Farm facilities are old, obsolete, and have been allowed to deteriorate over the last 20 years. Integration of needed activities to upgrade, restore, or replace these facilities, while at the same time mitigating or resolving safety issues, managing the waste in a safe and environmentally sound manner, and preparing the waste for retrieval, pretreatment, immobilization and disposal, will be a monumental task. These activities will require the dedicated efforts of the Department of Energy (DOE) Headquarters and Hanford staffs and the assistance of experts from DOE National Laboratories and other facilities, industries, and universities.

The TWRS Program was established in the Office of Environmental Restoration and Waste Management (EM) by the Secretary of Energy in December 1991 to manage and dispose of the waste in storage in 177 underground tanks at the Hanford Site. The scope of TWRS includes all activities and projects needed to resolve safety issues; operate, maintain, and upgrade the tank farms and supporting infrastructure; characterize the waste; retrieve the waste; pretreat and immobilize the waste for both on-site disposal of low-level waste and off-site disposal of high-level waste in a Federal repository; and support technology development activities. One of the major reasons to establish this program is to integrate all TWRS activities based on sound technical analyses. In January 1993, the Energy System Acquisition Advisory Board (ESAAB) approved the establishment of the TWRS as one Major System Acquisition.

The Department is completing a 15-month rebaselining effort for the TWRS to validate or revise the plan for three key activities (i.e., the Hanford Waste Vitrification Plant, grout disposal of double-shell slurry and double-shell slurry feed, and stabilization of single-shell tanks) and use systems engineering methodology to formulate an integrated, technical-based program for TWRS. Strategic options will be available for ESAAB review and selection of a new technical strategy in March 1993 with a new baseline proposed for ESAAB approval in June 1993.

The Department is developing a program management system and is implementing procedures to integrate all TWRS activities and projects consistent with the intent, to the degree practicable, of the requirements of DOE 4700.1, Project Management System. The TWRS program management system and procedures will be

presented to the ESAAB in June 1993 for approval. A monthly report tracking the status of program formulation and implementation in an integrated manner will be issued for use starting in April 1993. During the TWRS program formulation and initial implementation stages, a semi-annual review will be conducted by the ESAAB; an annual report will be submitted to Congress. The Department would be pleased to make these reports and briefings available to the Defense Nuclear Facilities Safety Board (DNFSB).

With the establishment of a technical strategy and associated baseline and a disciplined program management system, the Department will be able to tackle this large and complex engineering task. The waste in the 177 underground tanks represents a significant legacy of the Cold War. It is not just a Hanford problem to resolve; it is a problem the Department intends to address using the best talents from the DOE system.

Hanford Site

The Hanford Site is a facility in transition from being a component in a nationwide, structured, single-focused production system, to site-oriented, regulator-driven, waste management and environmental restoration programs. As identified in a recent study, Schedule Optimization Study - Hanford RI/FS Program (December 1992), the production-driven culture, organizational structure, management systems, and procedures are still impediments to the effective implementation of the environmental restoration mission for the Hanford Site. Taken together, recent reviews of tank farm operations indicate a root cause embedded requiring a "can do" total quality culture change to implement an effective, efficient, positive "get well" program. A tank farm "get well" plan is being developed as a part of the overall TWRS rebaselining effort, and the Hanford-wide "Top Ten Get Well Issues" have been identified and will be used to review the Activity Data Sheets for the next Five-Year Plan. The Hanford Mission Plan planning process will enable the Department to integrate the different waste management and environmental restoration programs into a coherent program to clean up the Hanford Site.

Multi-Function Waste Tank Facility

There was some ambiguity in the mission for these new tanks, i.e., storage or pretreatment. EM has taken actions to clearly establish the mission of the MWRF as resolving the safety issues and the new tanks as storage; this is reflected in the approved Justification of Mission Need for the MWRF. RL has been directed to review the project design and schedule for possible acceleration and revise the Project Plan and other project documentation. The MWRF scope and schedule will be further reviewed as a part of the TWRS rebaselining effort to ensure that the Department is managing this program as an integrated system with many interdependent operations and projects. For example, one of the critical areas would be the number of new tanks needed to resolve the safety issues, store waste in a safe and environmentally sound manner, support pretreatment, and support the overall Hanford environmental cleanup missions.

By letter dated August 28, 1992, the Secretary of Energy accepted the DNFSB Recommendation 92-4. The concerns in Recommendation 92-4 can be grouped into three issues: project management, staff qualification, and technical design basis. The project management and staffing issues are interrelated but separated here for discussion purposes. DOE actions to address these issues are discussed below:

92-4-1 Project Management

The DOE interprets the Project Management Recommendation from the DNFSB as follows:

DOE and its contractors need to establish project management organizations for the MWTF project which have clear lines of responsibility and accountability.

Both EM and RL have prepared reorganization proposals for the TWRS. Both proposals address the identified concerns regarding integration of EM TWRS policy, planning, management, budgeting activities, and organization along functional lines. I am prepared to expedite review of these organizational proposals and will make a decision within the next 90 days.

WHC is also being reorganized to integrate all TWRS activities and to incorporate the Battelle Pacific Northwest Laboratory (PNL) as an integral part of the team. All of these organizational structures will be reviewed as the TWRS functions are better defined during the systems engineering process. With these organizational realignments, selection of a technical strategy and approval of a technical baseline and the establishment of TWRS as one Major System Acquisition, DOE will be able to manage the TWRS as an integrated program. The monthly reports and semi-annual reviews with the ESAAB will allow ready assessment by top DOE management of the overall status of the TWRS program.

The current MWTF project organizational relationship includes EM, RL, and contractor staff in a management team, as shown in Figures 1 and 2. EM is responsible for policy and programmatic directions, while RL is responsible for the day-to-day management of the project activities. Contractual responsibilities for MWTF rest with RL, via their prime contracts with WHC, Kaiser Engineers Hanford (KEH), and PNL. For major construction projects, WHC is responsible for technical integration, startup, and operations after acceptance from construction. KEH is responsible for engineering design and construction management. PNL, as appropriate, is available for technical support. Each of the organizations involved has designated a manager with clearly assigned authority and responsibilities. At present, WHC is acting as the project integrator with the responsibility to ensure project completion in accordance with cost, schedule, and technical/functional requirements. In effect, WHC is fulfilling the role of the contracting officer's technical representative, with key decisions regarding project performance, design, and functional requirements retained by DOE.

Given the urgent need for these new tanks to support resolution of the tank waste safety issues, the Department is proceeding with the project using the current project management team. As DOE develops a management system for the

TWRS, we will be reviewing alternative approaches to obtain engineering, design, and construction contractors. A preliminary issue paper is given as Attachment 1, and we expect to make a recommendation to the ESAAB in June 1993, for approval.

92-4-2 Staff Qualification

The DOE interprets the staff qualification Recommendation from the DNFSB as follows:

In organizing the project management team, the Department should ensure that both DOE and the contractor have personnel of the technical and managerial competence to ensure effective project execution. The project management team should include the integration of professional engineering and quality assurance, assure that appropriate standards and DOE requirements are applied, and ensure adequate protection of public health and safety.

As stated earlier, reorganization proposals for the TWRS organizations at EM and RL are undergoing Departmental review; staffing levels and mixes will be proposed in evaluating alternative management systems for decision by June 1993. In the meantime, at the request of the former Assistant Secretary for Environmental Restoration and Waste Management, a review team headed by the EM Office of Administrative Management will evaluate, in February 1993, selected areas of the RL organization and staffing requirements, including the proposed organization of the TWRS. Results of this review will be used to evaluate an overall RL reorganization proposal.

Personnel selection, training, and qualification requirements for DOE and contractor positions for the TWRS organization, including MWTF, will be established. A procedure for personnel selection, training, and qualification requirements, consistent with the major elements of the procedure developed for the Replacement Tritium Facility at the Savannah River Site, will be developed for the TWRS. These elements include selection and training requirements, certification, and documentation. This procedure will be used to train and qualify existing personnel, and to recruit, train, and qualify new staff to positions which have a functional impact on safety or on our ability to carry out the TWRS mission. We expect to develop a draft procedure by June 30, 1993, and to finalize by September 30, 1993.

Obtaining a sufficient number and mix of Federal technical and managerial staff has always been a challenge, especially in fields such as chemical engineering and other highly technical areas. The TWRS will be a multi-billion dollar program and it is one of the largest and most complex engineering tasks facing the Department. Personnel practices at Headquarters and use of the new senior technical-level positions should be sufficient to obtain technical staff for EM. Obtaining a sufficient number of senior management personnel slots at EM and technical and senior management slots at RL, for TWRS could be limited by current personnel practices. A draft issue paper will be developed and staffing options evaluated with alternative management systems for approval by June 1993. This issue is defined and presented as Attachment 2.

92-4-3 Technical Design Basis

The DOE interprets the technical Design Basis Recommendation from the DNFSB as follows:

The MWTF project management organization should identify the design bases and engineering principles and approaches for the MWTF project that include detailed design bases, appropriate codes and standards, and functional design criteria. DOE should provide the rationale used in regard to the safety analysis that identifies safety-related items and shows that the design for the MWTF conservatively meets the quantitative safety goals described in the Department's Nuclear Safety Policy (SEN-35-91).

The MWTF mission is clearly defined as storage. The Functional Design Criteria and other design documents will be reviewed to ensure consistency with this objective. This review is being conducted as a part of the ongoing Advanced Conceptual Design. Managers from RL have recently reviewed the system used at the DOE Idaho Field Office (ID) for documenting functional and operational requirements. The ID system is being adapted for use at RL and will be implemented for the TWRS. TWRS upgrades and new projects will be designed to comply with applicable DOE Orders, Federal and State of Washington regulations, and industry codes and standards including applicable design, safety, and environmental analysis, quality assurance, and construction requirements.

To facilitate implementation of the Department's Nuclear Safety Policy, EM has been developing a set of risk acceptance criteria for high-level radioactive waste storage and processing which implement the safety goals. These criteria will be used to design the MWTF and other TWRS projects. Compliance with the quantitative safety goals will be guaranteed during the MWTF design phase by following the disciplined process indicated in Figure 3. The steps that are being followed include: (1) early identification of systems, components, and structures important to safety; (2) consistent application of safety-related design criteria such as that specified in DOE Order 6430.1A; (3) appropriate design reviews and safety issues tracking and closure; and (4) safety analysis feedback to the design team organization to ensure that the designated safety class systems remain adequate as the design matures. This ultimate risk can only be determined when there is sufficient information regarding the design to quantify both the accident consequences and frequency. This determination will occur during the Final Safety Analysis Report process. Upon finalization, these criteria will be submitted to the Office of Nuclear Energy for incorporation into the DOE Orders and standards system.

The design of the MWTF is an ongoing process, not suitable for a one-time implementation schedule. The Department accepts the intent of Recommendation 92-4 and plans to keep the DNFSB informed of program status by periodic reports and semi-annual briefings and technical approaches of specific projects or program elements by topical meetings and design documents.

Major Milestones

<u>Milestone</u>	<u>Date</u>
- Approval of TWRS reorganization	5/93
- Issuance of final Risk Acceptance Guidance for High-Level Radioactive Waste Facilities	5/93 - Final
- Approval of TWRS management system	6/93
- Approval of approach to staff qualification	6/93
- Selection, training, and qualification procedure	6/93 - Draft 9/93 - Final

Summary

Transition from the production to environmental management missions at the Hanford Site has been ongoing for more than 2 years and will continue for a few more years. The TWRS has been in the forefront due to the tank waste safety issues and the symbolism of the Hanford Waste Vitrification Plant as the cornerstone of the Hanford cleanup program. With the agreement of the Washington Department of Ecology, the DOE is completing a 15-month rebaselining effort which will define an integrated, technical baseline for the TWRS. The systems engineering approach has proven to be an effective tool for TWRS and is being considered for applications to other Hanford and EM waste management programs. The Department recognizes the concerns identified in Recommendation 92-4 and will address these concerns in the program formulation and implementation process for TWRS.

Tank Waste Remediation System Program Functional Relationship

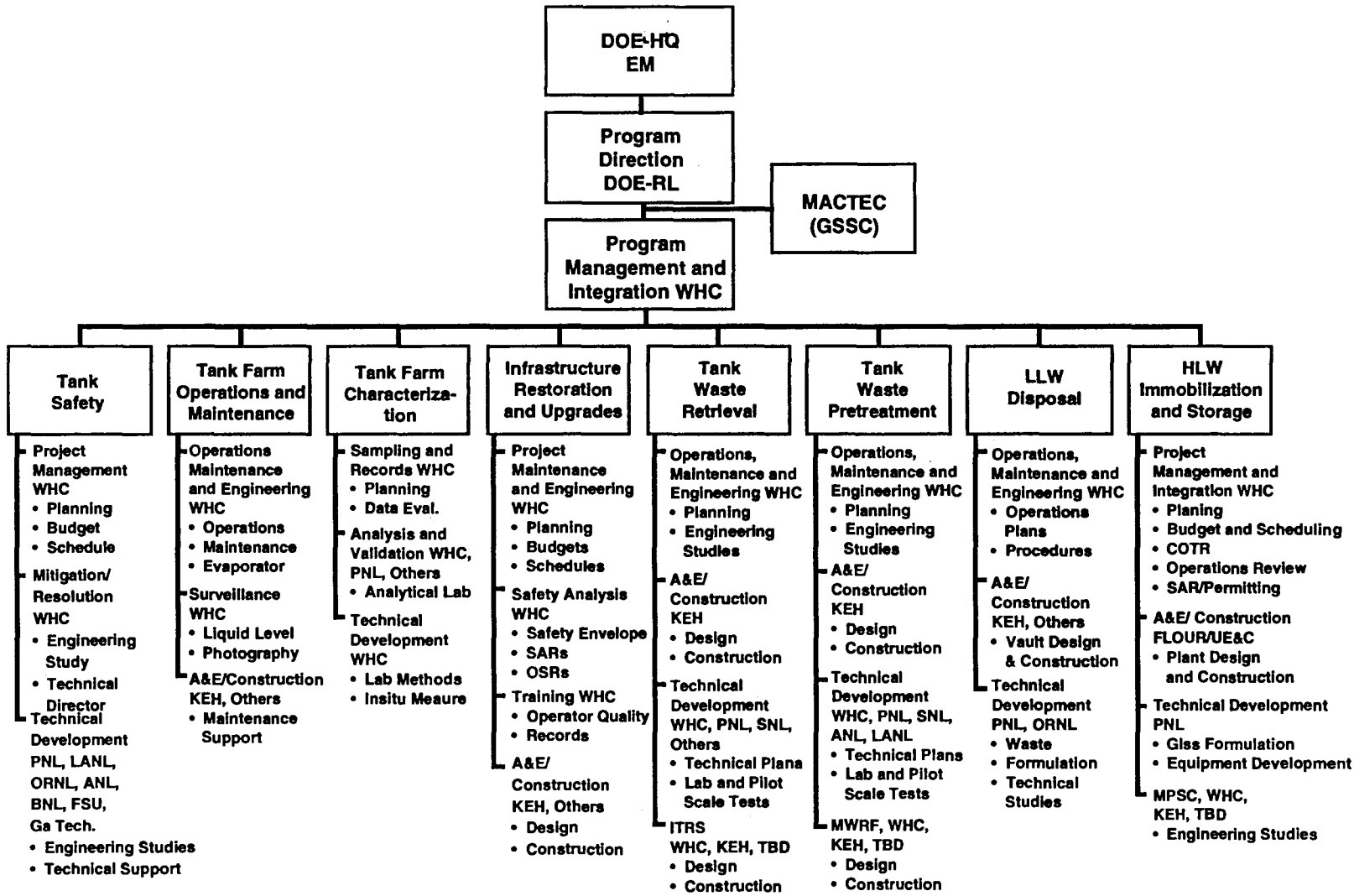


FIGURE 1

Tank Waste Remediation System Key Program Participants Organizational Relationships

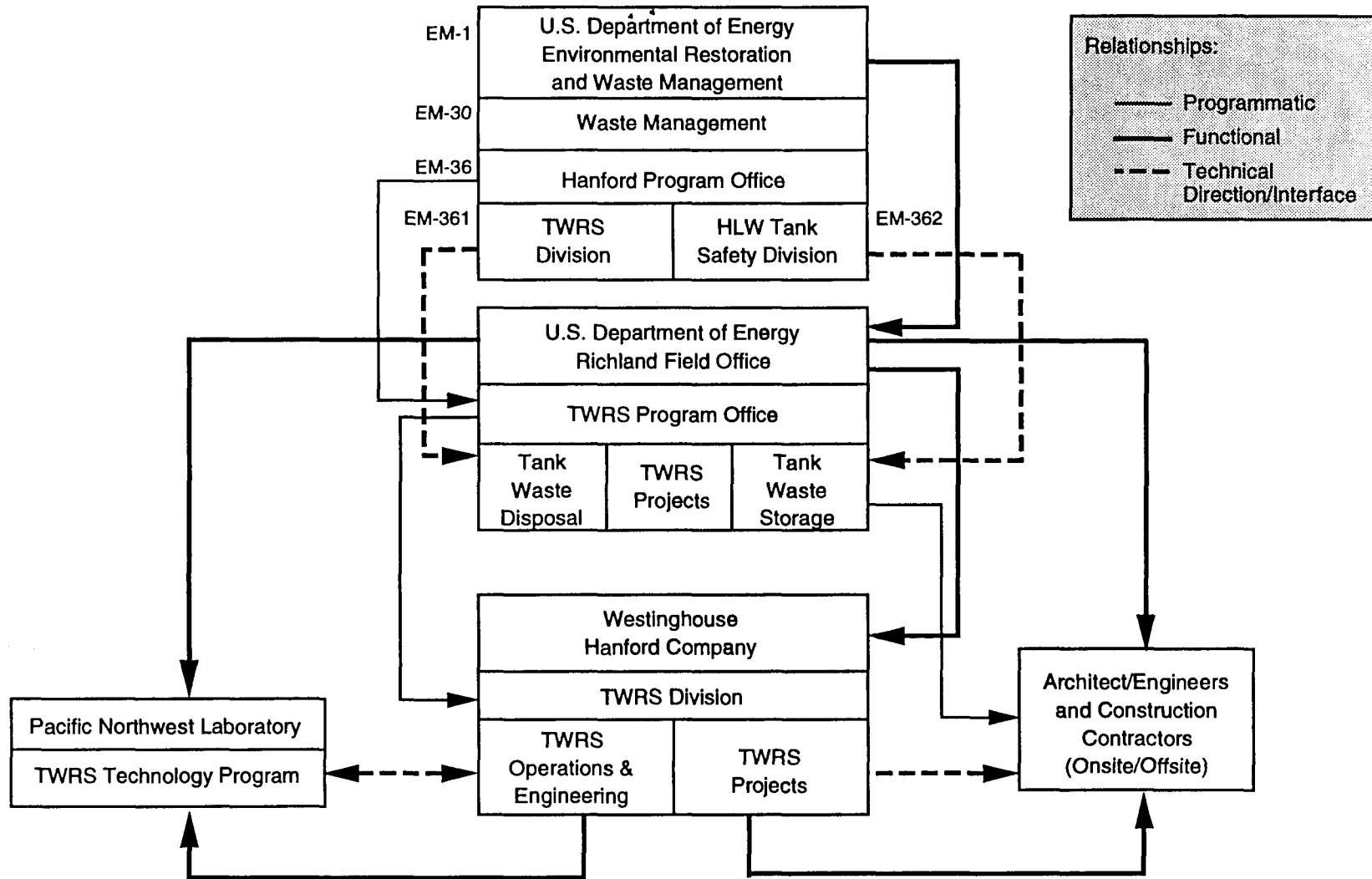


FIGURE 2

Multi-Function Waste Tank Facility (MWTF)

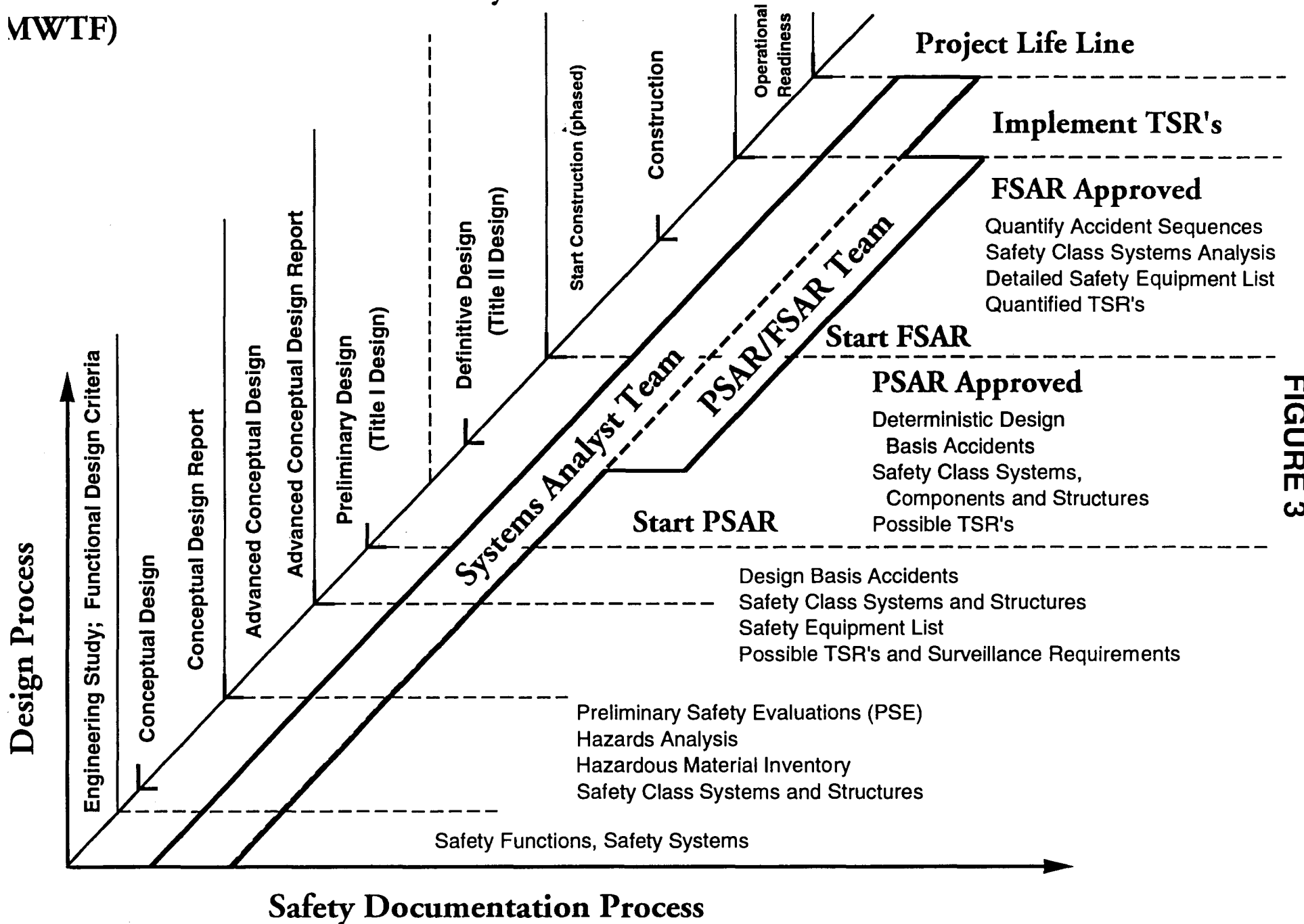


FIGURE 3

ISSUE: PROJECT MANAGEMENT

The existing project organization does not appear to be fully integrated due to lack of clear lines of authority and responsibility.

OPTIONS: There are two options for implementing an integrated project management organization. These options are outlined as follows:

- a. assign the Management and Operating contractor full authority and responsibility for the integration including contracting with design and construction contractors. The DOE Richland Field Office is responsible for overseeing the project;
- b. The DOE Richland Field Office retains the authority and responsibility for the integration by directly contracting for design and construction contractors (DOE Headquarters is responsible for overseeing the DOE Richland Field Office).

Within each of these options, there are two sub-options for the assignment of specific authorities and responsibilities to the Project participants:

- a. assign specific authorities and responsibilities to specific positions within each organization;
- b. assign specific authorities and responsibilities only to the organizations generally.

ISSUE: STAFFING QUALIFICATION

Ensure that the DOE Richland Field Office Tank Waste Remediation System organization has competent personnel of the required technical and managerial expertise to support all phases of the project (design, construction, startup).

OPTIONS: The options to address the issue of expertise and competence include the following:

- a. target hiring towards technical specialists to provide the in-house expertise for technical direction of the Project; require DOE Richland Field Office to modify existing personnel classification practices;
- b. target hiring towards "generalists" and use contractors to provide technical and management support.