

THE SUCCESSFUL TRANSITION FROM PLANT OPERATIONS TO DECOMMISSIONING AT MAINE YANKEE

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ABSTRACT

When the decision was made to decommission the Maine Yankee Atomic Power Company (MYAPC) a period of significant changes was started for people plant and processes. Plans were prepared that delineated how personnel changes were made, how hardware changes were made, and how process changes were made to transition the plant from operations to decommissioning. Effective management of these Plans is essential and should address and integrate each step of the required regulatory and engineering program and personnel changes.

The transition from the operating company to a decommissioning contractor also requires detailed transition plans for each of the programs and processes subject to turnover. At MYAPC the decommissioning contractor, Stone and Webster, prepared the transition plans and performed readiness reviews before taking responsibility for the process or program affected. Significant cost savings to the decommissioning fund have been realized through effective planning and management of the transition process.

INTRODUCTION

The Maine Yankee Atomic Power Company (MYAPC) is an 860 Mwe, three loop; PWR located in Wiscasset, Maine. The Maine Yankee plant was shutdown in 1996 after 24 years of operation and generating 120 Billion KW-Hrs of electricity. A photograph of MYAPC during operation is provided below as Figure 1.

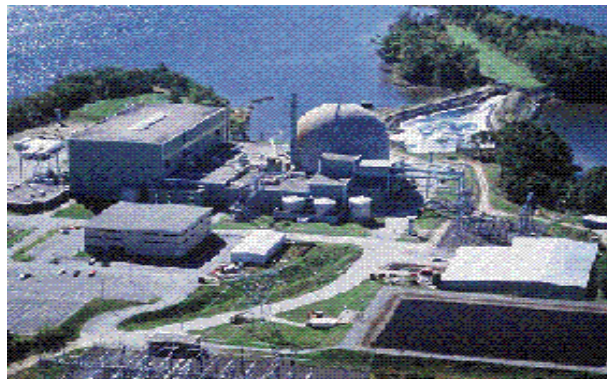


Figure 1 - Maine Yankee Plant

The MYAPC Board of Directors voted to permanently shutdown the plant in August 1997. Entergy Nuclear Inc. was retained to manage the decommissioning of the Maine Yankee plant. Stone & Webster performed the “Cold and Dark” work and is presently dismantling the Maine Yankee plant as the Decommissioning Operations Contractor (DOC).

The major milestones established for decommissioning Maine Yankee and terminating the 10 CFR Part 50 License are listed below.

- Complete Cold and Dark Activities by Fall 1998
- Initiate Major Decontamination and Dismantlement Activities by Spring 1999
- Remove Steam Generators, Reactor Coolant Pumps, Loop Isolation Valves, and Pressurizer by Summer 2000
- Remove the Reactor Pressure Vessel by Summer 2001
- Begin transfer of Spent Fuel to ISFSI by Spring 2001
- Complete Spent Fuel transfer to ISFSI by Fall 2002
- Stone & Webster (DOC) completes Decontamination, Dismantlement and Site Restoration Work by Spring 2004
- Maine Yankee receives License Termination from US NRC by Fall 2004

At the present time Stone & Webster has completed the removal, shipment and disposal of the three (3) Reactor Coolant Pumps, six (6) Loop Isolation Valves and approximately 30 percent of the waste commodities from plant systems and components. In addition, Stone & Webster has completed demolition of various outside structures.

Two distinct types of Transition Plans were needed to initiate a successful decommissioning process; 1) transitions from an operating plant to a plant in decommissioning and 2) transitions from the operating company to contractor control. In addition, following award of the DOC approximately seven (7) months of transition time were required for the Contractor to initiate full-scale dismantlement work.

TRANSITIONS FROM AN OPERATING PLANT TO A PLANT IN DECOMMISSIONING

1. Licensing Transition Activities

A successful licensing transition was required to initiate the decommissioning process. The major activities listed below were formulated into a detailed plan to effectively address the licensing issues.

- Cessation of Power Production Operations/Reactor in De-fueled Condition
- Preparation of Post-Shutdown Decommissioning Activities Report
- Preparation of the Site Specific D&D Estimate
- Preparation of the Amended Technical Specifications for De-fueled Condition
- Preparation of Updated Safety Analysis Report for De-fueled Condition

- Revisions to the Safety Bases
- Revisions to the Safety Classifications for Structures, Systems, and Components
- Revisions to the Plant Organization and Operation Programs

- Defining Exemptions and revising the Security Plan
- Defining Exemptions and revising the Emergency Plan
- Implementing Insurance Reductions
- Establishing Certified Fuel Handler Program
- Establishing a Decommissioning Fitness for Duty Program
- Preparation of a Revised QA Program

2. Engineering Transition Activities

The Engineering Transition activities support Licensing documents, submittals to Federal, State and local regulators, and prepare the plant and facility support programs for decontamination and dismantlement. The major categories of engineering support efforts are listed below.

- Perform analyses for the Decommissioning Safety Bases
- Design of the Spent Fuel Pool Island and New Control Room
- Modification of Structures, Systems and Components for Decommissioning
- Development of System Abandonment Criteria
- Development of Long Term Spent Fuel Storage Strategy
- Prepare revisions to the Maintenance Rule Program
- Prepare revisions to Fire Hazards Analysis and Fire Protection Plan

3. Transition Activities to Initiate Decommissioning Work

Effective planning is required for those transition activities that will assure efficient and cost effective startup of the decontamination and dismantlement efforts of the Decommissioning Project. These activities (listed below) can be managed as separate Projects by existing plant staff and provide significant cost savings to the overall budget when completed prior to full-scale dismantlement. Completing these activities place the facility in a "Cold and Dark" condition.

- Establish and Commission a Community Advisory Panel
- Develop Contract Strategies and Perform Bid Evaluations
- Perform an Asbestos Abatement Program
- Perform a Comprehensive Site Characterization
- Perform Chemical Decontamination of Primary System (if necessary)
- Identify and Initiate Asset Recovery for Marketable Equipment and Components
- Prepare facilities for Cold Weather Operations
- Identify and Dispose of Hazardous Wastes

4. Just as significant as the licensing, engineering and physical preparations, for initiation of the decommissioning process, is the effective management of transition activities for Plant Staff and Organization. The key activities for Plant Staff and Organization transitions are listed below.

- Implement Employee Communication Strategies
- Develop Employee Severance Plans
- Develop Early Retirement Plans
- Develop Employee Retention Plans
- Establish Career Transition Services
- Develop the Decommissioning Staffing Plans
- Transfer Staff to Contractor (DOC)

5. In parallel with the staff and organization changes are the transition of functions and responsibilities for the retained Plant Staff for decommissioning. The functions and responsibilities for the retained MYAPC Staff are listed below.

- Supervise System Abandonment Process
- Disposition Hazardous Waste Materials
- Simplify Process, Programs and Procedures
- Implement Certified Fuel Handler Program
- Implement Spent Fuel Risk Management Program
- Implement Plant De-fueled Security and Emergency Plans
- Maintain Plant for Cold Weather Operations
- Maintain Decommissioning Fire Protection Plan
- Remove Legacy Radioactive Waste
- Manage and Provide Oversight for Contractor (DOC)
- Manage Decommissioning Fund

It was found to be extremely important for staff productivity and moral to clearly define roles, responsibilities, and expectations for the retained Plant Staff.

TRANSITIONS FROM THE OPERATING COMPANY TO CONTRACTOR CONTROL

The efficient transfer of responsibilities associated with necessary support functions and programs for the operating plant is critical to a smooth and cost effective transition to decommissioning. The major plant support functions and programs which were transitioned to contractor control are listed below.

1. Procedures and Transition Plans
2. Industrial Health and Safety Program
3. Management and Maintenance of Facilities
4. Fitness for Duty Program
5. Training Program

6. Industrial Security
7. Radiation Protection Program
8. Site Fire Protection Program
9. Configuration Management of Systems and Structures
 - Modified Work Order Program
 - Tagging Program for Systems and Components
 - Design Change Program
10. Chemistry, Environmental and Health Physics Laboratory
11. Waste Management Program

A timeline of these transition activities is provided below. The schedule for these transition activities was originally estimated to be a few months. Although many Contractor activities (including initial source reduction, decontamination and dismantlement) were performed in parallel, the formal transition period extended to approximately seven (7) months. The procedure and plan development activity included MYAPC staff review and approvals.

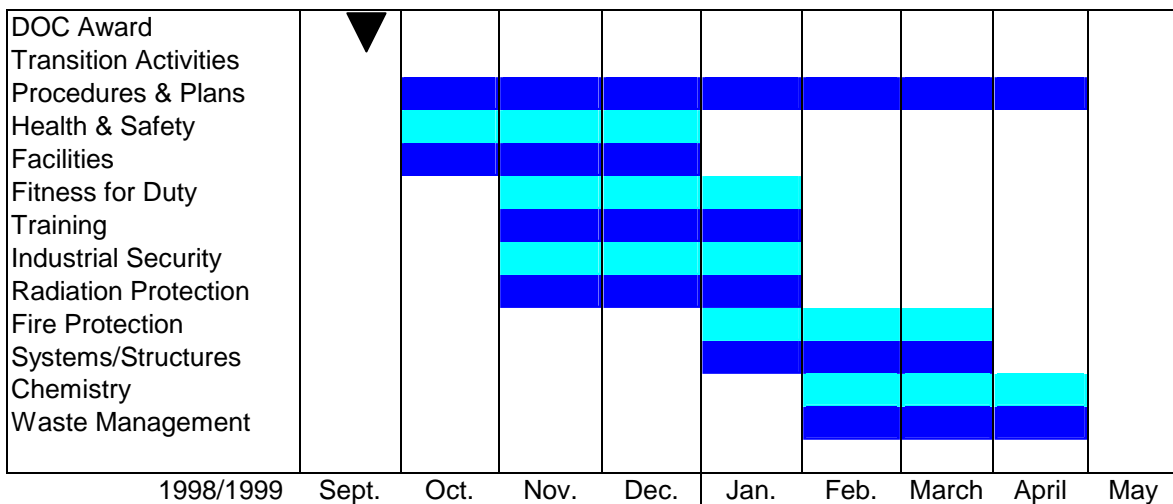


FIGURE 2 - Transition Timeline for Operating Company to Contractor Control

Effective transition of these plant support functions and programs provide confidence to regulatory agencies that the decommissioning activities will be performed in a safe and responsible manner.

TRANSITIONS FOR THE CONTRACTOR

Significant efforts required by the Contractor to initiate the major decommissioning activities include staffing, subcontracting, labor agreements, training, finalizing strategies and plans, and obtaining client approvals. The major decommissioning activities are listed below.

1. Waste Management
2. Source Term Reduction Program
3. Dismantlement and Demolition
4. Facility Maintenance and Disposition
5. Large Component Removal, Transportation and Disposal
6. Obtaining Local and State Permits
7. Reactor Pressure Vessel Removal and Disposition of Greater Than Class C Waste
8. Construction of the Independent Spent Fuel Storage Installation and Spent Fuel Transfer
9. Asset Recovery and Re-powering

CONCLUSIONS

Transition Plans for Contractor work on the Maine Yankee Decommissioning Project were finalized and approved in April 1999. Although a significant amount of work had been completed at that time, including all "Cold and Dark" activities and isolation of the Spent Fuel Pool island, this marked the formal start of decontamination and dismantlement. Although the programs and processes could have been changed without preparing transition plans and active management of the transition process, the chances of success without significant issues and delays would have been remote. Similar to the performance of infrequent evolutions at operating nuclear plants, transition plans and associated check lists helped insure that the changeovers were completed in an efficient and timely manner.