PROJECT MANGEMENT PLAN EXAMPLES

Project Execution Example

Example 73

6.3 Project Approach

The overall schedule strategy for the PFP project includes ongoing minimum safe activities, combined with stabilization of materials followed by materials disposition, and subsequent transition of the PFP complex to a decommissioned state.

The PFP material stabilization baseline was developed using a functionally-based work WBS. The WBS defines all activities required to take each material stream from their current location/conditions through stabilization (as required), and disposition the stabilized material as solid waste for shipment to WIPP or as product material for shipment to SRS.

Initially, workshops were held with subject matter experts, project managers, schedulers, and support personnel (experts in the area of radiological control, environmental issues, NEPA documentation, etc.). Requirements for successfully completing stabilization of the material streams for the type of processes to be used were identified. Based on the results of these workshops, flow diagrams, resource and cost estimates, and schedules were developed for the individual processes. A common critical path constraint for many of the material streams was the requirement for a WDOH air permit (Notice of Construction [NOC]). The other administrative critical path requirement was performance of a readiness assessment or operations readiness review for the activity.

The processing activities were prioritized based on risk presented by material streams (for example, metals and solutions pose a higher risk in their current configuration than SS&C). In addition, consideration was given to equipment availability (metals cannot be processed until the bagless transfer system is on line), funding issues, resource constraints, and equipment limitations (solutions, metals, and oxides all require usage of the thermal stabilization furnaces). Finally, operator availability, budgetary limitations, and equipment capacity limited the processing activities themselves. The following sections summarize the implementation approach for each major WBS area.

6.3.1 Maintain Safe and Compliant Condition Approach

As stabilization, disposition, and transition activities are completed, there will be a corresponding reduction in work scope and associated funding levels required to maintain the PFP complex in a safe and compliant condition. There will also be discrete reductions in funding requirements throughout the remaining life of the complex due to reduction in required activities. For example, there is a significant drop in the funding profile after FY 2004. This reduction occurs principally due to the completion of the required revisions to the PFP Criticality Safety Evaluation Reports, a significant reduction in the area of procedure maintenance, and a reduction in new training course development.

At the completion of FY 2005, stabilization activities will be completed in 234-5Z Building. This will result in a corresponding reduction in the Maintain Safe & Compliant Conditions, and in the Maintain Safe & Secure SNM activities. An approximate 50 percent reduction in Safeguards and Security patrol force costs will be achievable. Special nuclear material (SNM) accountability activities will be reduced by approximately 60 percent. Operating, maintenance, and administrative procedures for the stabilization activities are removed in total since they are no longer required. The support for the Facility Safety Analysis Report (FSAR) annual update is reduced by approximately 50 percent, due to the reduction of SNM inventory.

In the last quarter of FY 2007, the final shipment of fuel pins is achieved. This milestone reduces the Safeguards & Security patrol force and SNM accountability requirements by an additional 40 percent. The FSAR annual update is also reduced another estimated 40 percent with the final 10 percent remaining for updates associated with Transition activities. Security system requirements, workscope, and funds are reduced by 100 percent. Surveillance activities and preventative maintenance support associated with 2736-ZB Building drops by an estimated 50 percent.

Over the next several years. the complex will be completing final hold-up processing activities, deactivation facilities in preparation for transition and subsequent demolition, and completion the final shipment of all materials. This results in the reduction of staff, training requirements, facility management, maintenance and operations, surveillances, and quality assurance activities. An assumption was made that this ramp down will occur at a level rate over the period FY 2008 through FY 2014.

During the period FY 2014 through FY 2016, the ventilation systems are removed from various facilities throughout the PFP complex. The remaining facilities are demolished resulting in corresponding reductions in the activities required to maintain the PFP complex in a safe and compliant condition.

In FY 2017, the funding profile to the Maintain Safe & Compliant Conditions activity can be reduced to the minimum necessary to simply provide for basic care of the area where the PFP complex used to stand. This would include activities such as grounds maintenance and minimal surveillance.

6.3.2 Stabilize Materials Approach

6.3.2.1. Project Approach for Solution Stabilization . The current path forward for the Solutions subproject is to stop the current installation work on the production vertical denitration calciner (VDC) and proceed with the design and installation of the

magnesium hydroxide precipitation process. Since the installation of the VDC is near completion (approximately 80% complete), it should remain available for use should difficulties be encountered with the planned magnesium hydroxide process.

The VDC project work associated with the upgrades in the down load facility in Room 227 will be completed. The Room 227 work includes seismic upgrades to Glovebox HC-227S and electrical and piping modifications in Room 227. These upgrades will support the magnesium hydroxide precipitation process.

Design and fabrication of the magnesium hydroxide precipitation process equipment will be initiated in FY 1999. Current planning includes fabrication of the glove box, and installation of the equipment in the glove box by off-site fabricators. Following delivery of the equipment to Hanford, operator training and shakedown testing will be performed in a non-radioactive and non-safeguards facility prior to installing the equipment at PFP. Operator training is expected to begin during the second quarter of FY 2000.

Construction activities will begin in October 1999 with room preparations, and be completed by the end of the second quarter, FY 2000.

Previously, the baseline approach for solution stabilization involved a process of direct denitration through use of a vertical calciner. Impure solution material required treatment through an ion exchange system prior to introduction to the vertical calciner. The alternative processing approach of treatment by magnesium hydroxide precipitation was chosen over use of ion exchange and vertical denitration calciner due to its design and operating simplicity and its ability to treat all solutions without pretreatment.

Processing of the plutonium-bearing solutions is based on two shift operation. One shift will be used to download the solutions from their containers into the glove boxes in Room 227 for blending (and dilution if required). The second shift of operators will receive the solution from Room 227 and process the solution through the magnesium hydroxide precipitation process. The precipitated product material will then be dried on a hot plate and thermally stabilized in the 234-5Z Building muffle furnaces.

6.3.2.2 Approach for Residue Stabilization . In general, administrative preparations including processing calculations, environmental permits, safety reviews, and other documentation are performed prior to initiation of processing activities. These processing activities are then linked logic tied to provide the overall processing duration. All residue streams are currently scheduled for completion by the third quarter 2004 per the following discussions. Two separate processes will be implemented to stabilize residues: cementation, and "pipe and go."

Cementation:

- The administrative preparation and documentation effort is scheduled to begin the third quarter of 1999, with the Readiness Assessment scheduled for completion by the second quarter of 2000. The compounds will be processed in FY 2000, followed by miscellaneous residues. This is based on a one-shift per day, five days per week basis. At this point, cementation operations will be stopped (except for minimal operations to maintain proficiency). The SS&C is scheduled for processing beginning October 2001 and will be completed in the first quarter of 2003.
- Processing of MOX and oxides containing less than 30 percent by weight plutonium will be initiated following completion of SS&C processing. Cementation of MOX/Oxides is scheduled from the first quarter of 2003 to the second quarter 2004. This will be followed by combustibles (the last residue stream).

Pipe and Go:

- The preparation and documentation effort is scheduled to begin the third quarter 1999, with the Readiness Assessment (RA) scheduled for completion by the fourth quarter 2001. (Note: The RA could be completed by late FY 2000, but was delayed to level operator resources.) Operations will begin in FY 2002 and will be completed within the first quarter following initiation of repackaging. This duration is based on a one-shift per day, five days per week operation.

6.3.2.3 Project Approach for Polycube Stabilization . The PFP polycubes will be stabilized using pyrolysis equipment that has been designed and fabricated by LANL. The equipment consists of the pyrolysis furnace with a catalytic converter to treat the off-gas. Fabrication is expected to be complete near the end of CY 1999. The pyrolysis equipment will be installed in the Remote Mechanical "C" line of PFP. Removal of existing equipment in the Remote Mechanical "C" Line is expected to be completed near the end of CY 1999. Pyrolysis equipment installation is expected to be complete in mid FY 2000.

Stabilization of the PFP polycubes is currently scheduled to be performed during an XYZ process schedule (three-shift rotation, Monday through Friday). The pyrolysis process is currently expected to take 12 to 14 hours to complete the cycle, with seven cycles completed during the course of a five-day work week (utilizing two furnaces for an expected throughput of 14 total charges per week). Pyrolysis is not currently scheduled to start until January 2003, due to resource limitations. Processing time is expected to be less than one year.

However, it is noted that recent (4/99) laboratory analyses have indicated that the current condition of the PFP polycubes may impact the current processing plans.

6.3.2.4 Project Approach for Thermal Stabilization . In general, administrative preparations, including processing calculations, environmental permits, safety reviews, and other documentation are performed prior to initiation of processing activities. The processing activities for metal and alloys are constrained by the availability of the bagless transfer system before brushing and/or thermal stabilization of these two material streams can commence.

Stabilization of oxide/MOX in the 234-5Z Building muffle furnaces will continue on a three-shift basis (XYZ rotation), five days per week, until the magnesium hydroxide precipitation process is available in July 2000. During magnesium hydroxide precipitation processing, the furnace capacity is expected to be fully utilized to calcine the dried precipitate. The stabilization of oxides/MOX in the 234-5Z Building muffle furnaces will recommence following completion of the solution processing through the magnesium hydroxide precipitation process.

Brushing/stabilization of metals will start as soon as the bagless transfer system is available (currently planned for November 2000) and will continue for three-shift per day cycle (XYZ rotation), five days per week. Alloy stabilization in the 2636-ZB Building furnaces follows immediately after completion of work on the brushing/stabilization of metals.

6.3.3 Project Approach for Direct Shipments Offsite

Shipments to SRS for canyon processing include high assay SS&C items, aluminum-plutonium alloys, and plutonium tetra-fluoride. These items will be packaged in gloveboxes to meet receiver standards, then packaged into 9975 containers or Department of Transportation 6Ms, as applicable. Shipments to Oak Ridge National Laboratory include highly enriched uranium items and special isotopes (excess standards which will be returned following completion of processing).

6.3.4 Facility Transition Approach

The PFP transition baseline was developed using a functionally based work breakdown structure. The functions (or activities) are based on the location hierarchy for the PFP complex. Each building, room, component or structure is addressed in the WBS. The WBS takes each location (as applicable) through the following steps: clean out and transition of the rooms and the process equipment, building dismantlement to achieve the clean "slab-on-grade final condition, post-dismantlement stabilization, and safe and stable actions for underground structures or residual contamination. In addition to the physical activities, required project management and process support activities are also included in the WBS.

A decision-based schedule was developed using critical path methodology. Key constraints and logic ties were used to sequence the tasks within the transition technical baseline. Links were also established between the stabilization, disposition, and maintain safe and compliant functions where appropriate.

The critical path for the transition schedule begins with the clean out and stabilization of the active process areas within 234-5Z Building, upon completion of stabilization activities within 234-5Z Building. Prior to this action, transition planning activity optimization studies, end point development, and Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) documentation must be prepared. The planning activities will identify decision points that will be used to update and refine the baseline in terms of how and when the various work activities will be performed.

Transition of a number of the areas within 234-5Z Building and elsewhere within the PFP complex can be initiated once the transition planning actions are completed but prior to completion of all stabilization actions. Initial areas scheduled for transition includes: the inactive process areas; the second floor administrative areas; the second floor chemical makeup areas; and the standards laboratory. It is assumed that the functions performed in these areas will be moved to other areas within the PFP complex. By starting activities in these areas operational experience can be gained prior to transitioning some of the more complex areas. Because of the regulatory concerns over 241-Z-361 tank, it is also scheduled to begin early on.

The critical path continues through the transition of all process and administrative areas within 234-5Z Building. Plutonium hold-up requiring removal and processing is addressed at this time. Also during this time frame, transition of 236-Z and 242-Z Buildings is initiated. Following completion of the process and administrative areas, it is then possible to begin clean-out and transition of the duct levels followed by the exhaust filter room, the waste handling area and the plastic shop. A NEPA evaluation is prepared to determine the level of documentation needed to proceed with each step of the transition program. It is assumed that an EIS will be required prior to building dismantlement but not prior to clean-out and transition of the rooms and gloveboxes.

Once all stabilization activities are completed in the 2736 Building complex (i.e., all repackaging and hold-up stabilization is completed) and all materials have been disposition (shipped), then transition, dismantlement, and post-dismantlement site stabilization for the 2736-Z Vault Complex and associated administrative and support buildings can proceed. These actions will likely proceed in about the same time frame as the 234-5Z Building duct level clean out and transition.

The critical path then continues through the dismantlement and post-dismantlement stabilization of 234-5Z Building. Dismantlement of 236-Z and 242-Z Buildings will proceed in parallel with 234-5Z Building. During the same time frame as the dismantlement of these buildings, the transition of the utilities and yard structures will occur. Clean out and dismantlement of the above ground portions of the 241-Z and 243-Z Buildings will be the last of the transition activities. Also, during this time frame, any required safe and stable actions for underground structures and waste sites will be conducted.

In an effort to maintain reasonable staffing profiles and consistent funding profiles, those activities that were not on the critical path, or otherwise constrained, were moved within the schedule to achieve the desired profile.