PROJECT MANGEMENT PLAN EXAMPLES

Policy & Operational Decisions, Assumptions and Strategies Examples 1 & 2

Example 1

1.0 Summary

The 322-M Metallurgical Laboratory is currently categorized as a Radiological Facility. It is inactive with no future DOE mission. In May of 1998 it was ranked Number 45 in the Inactive Facilities Risk Ranking database which the Facilities Decommissioning Division maintains. A short-term surveillance and maintenance program is in-place while the facility awaits final deactivation. Completion of the end points described in this deactivation project plan will place the 322-M facility into an End State that can be described as "cold and dark". The facility will be made passively safe requiring minimal surveillance and no scheduled maintenance.

Since initial construction in 1956, the primary mission of the 322-M Metallurgical Laboratory has been to support the M-Area production facilities, although metallurgical analyses were occasionally performed on material from other areas of the site. Specific work, in support of 313-M, Slug Fabrication Facility, included destructive examination of sample cores from each 100 slugs of depleted uranium metal received from the supplier. Cores were examined for grain size and structure, inclusion stringer factor, matrix inclusion size and distribution, and hardness. Clad slugs were subject to a stud-pull tensile test to determine cladding bond strength and defective slugs were examined to determine the cause of the defects. In addition to supporting Reactor Materials operations, the 322-M Metallurgical Laboratory supported Tritium production by performing metallographic evaluation of pinch, reclamation and inert welds. Additional laboratory space was built in 1982 specifically to perform the metallurgical analysis of enriched uranium products being fabricated in 321-M, the Fuel Fabrication Facility.

During the first and second quarters of FY95, the 322-M Metallurgical Laboratory was removed from operations and transitioned to a non-operating, inactive facility. At that time, a transition team was formed, a formal plan was prepared, systems were shutdown and clean-up initiatives where undertaken to deactivate the facility based on general knowledge of the hazards in the facility and good environmental stewardship. Though without formal DOE guidance, these initiatives placed the facility in a stable and safe condition for short-term surveillance and maintenance. A Transition Report for 322-M (Reference #1) was issued in March 1998 and is an excellent source of detailed information on the history and current status of the 322-M Metallurgical Laboratory.

Implementation of this 322-M Deactivation Project Plan will place the facility into a passively safe and stable configuration with minimal surveillance and no scheduled maintenance requirements. This Deactivation Project Plan is the second of seven deliverables required by MP 5.24*, Excess Facility Disposition*, that documents the five phases of the Excess Facility Disposition Process, and conforms to the format prescribed in WSRC Manual C 2.1, Procedure FD 1.01, *Planning for Excess Facility Disposition*.

A "graded approach" hierarchical method was used to develop the end points in this deactivation project plan. The methodology was similar to the "Hanford Method" but did not make use of the computer software package developed at Hanford. The basic sequence of planning was to define the End State, set the objectives, develop task types, create a functional matrix, define the cases, establish the criteria, and identify the end points.

The work needed to accomplish the end points will be implemented as work requests under the existing site work management system when funding is allocated. Once work starts, it is estimated that it can be completed within twelve months. This includes the physical work at the facility, preparation of the long-term Surveillance and Maintenance Plan, and completion of the required administrative Deactivation Project Completion Report.

2.02 Initial Status of the Facility

2.02.01 Facility Status

In the first and second quarters of FY95, the 322-M Metallurgical Laboratory was removed from operations and transitioned to a non-operating, inactive facility with no DOE mission. At that time, a transition team was formed, a formal plan was prepared, systems were shutdown and clean-up initiatives where undertaken to deactivate the facility based on general knowledge of the hazards in the facility and good environmental stewardship. Though without formal DOE guidance, these initiatives placed the facility in a stable and safe condition for "short-term" surveillance and maintenance (S&M).

2.02.02 Hazard Category & Priority

The 322-M Metallurgical Laboratory is currently classified as a Radiological Facility as documented in the Justification for Continued Operation (JCO) for M-Area (Reference #2). This hazard category was determined based on the removal of the accountable nuclear material inventory during the pre-deactivation work performed in FY95. The 322-M facility was ranked Number 45 out of approximately 130 inactive SRS facilities in the May 1998 FDD Inactive Facilities Risk Ranking database.

2.02.03 Facility Condition

Based on visual inspections done during facility walkdowns, the structures and the existing protective barriers that ensure the safety of the worker, the public, and the environment are in good condition. However, many of the ceiling panels and carpet tiles are degraded due to mold growth resulting from increased levels of moisture since the HVAC has been shutdown. Some of the ceiling panels have buckled and/or fallen out of their frames due to the moisture. The building exterior is in good shape with no visible degradation of paint or coatings.

Example 2

1.0 INTRODUCTION, PROPOSED ACTION, NATURE OF CONTAMINATION

1.1 INTRODUCTION

On July 19,1996, the Rocky Flats Clean-up Agreement (RFCA) was signed by Department Of Energy (DOE), the Colorado Department of Public Health and the Environment (CDPHE) and the Environmental Protection Agency (EPA). RFCA is the document which will govern the clean-up and decommissioning of the Rocky Flats Environmental Technology Site (RFETS) facilities. The clean-up actions will be completed as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal actions. The 779 Cluster project will be conducted as an IM/IRA due to the estimated time (>6 months) from commencement of physical remedial work to completion. In compliance with RFCA, DOE has developed this Decommissioning Operations Plan (DOP) which outlines how the RFETS decommissioning activities for the 779 Cluster will be managed and controlled. RFCA also requires that a DOP be developed for the most hazardous facilities at RFETS. As the integrating contractor at RFETS, Kaiser-Hill Company, L. L. C. (K-H) has developed a Decommissioning Program Management Plan (DPMP), a Site wide management and project planning document, to identify how the RFETS decommissioning program will be implemented and monitored. The referenced procedures and project documents are identified to add clarity to this DOP. The DOP and the Reconnaissance Level Characterization Report (RLCR) will be transmitted to the Lead Regulatory Agency (LRA) for approval in accordance with RFCA. In keeping with the spirit of RFCA and in an attempt to maintain public involvement, other major project documents (i.e., Demolition Plan) will be developed with the LRA and incorporated into the DOP through a major or minor modification. The modification process outlined for Interim Measure/interim Remedial Action (IM/IRAs) in RFCA, Paragraph 127, will be used.

RFCA identifies six facilities which will require a DOP and states that other facilities may require a DOP. The necessity for a DOP is based on the hazards identified in the facilities' Reconnaissance Level Characterization Report (RLCR) and as negotiated with the LRA. The 779 Cluster (identified in Figures 1-1 and 1-2) is not one of the seven facilities identified in RFCA as requiring a DOP, but because the 779 Cluster is the first plutonium operations building to be decommissioned, it was identified by DOE as a pilot project. The 779 Cluster DOP will be used to define the detail required in future DOPS, how the DOP should be structured, and how the DOP will be used during the decommissioning implementation. This document is the DOP for the 779 Cluster. The hierarchy of decommissioning documents to be used in completing the 779 Cluster decommissioning is identified in Figure 1-3 of this document. The shaded boxes in Figure 1-3 identify the Site procedures that are

incorporated into the Integrated Work Control Program (IWCP).

Prior to the start of decommissioning activities, the 779 Cluster goes through a deactivation process as described in the RFCA and the DPMP. The deactivation process was completed in Fiscal Year 1997. The condition of the 779 Cluster at the end of deactivation is identified in Section 3.1.2 of this document. The information was derived from walkdowns of the facilities, information obtained for the RLCR, and actions completed during deactivation to achieve the identified Deactivation End Points.

1.1.1 PROPOSED ACTION

The proposed action in this document is to decommission the 779 Cluster Facilities by removing the interior equipment , decontaminating the remaining structures, and dismantling the facilities.

This effort would leave the 779 Cluster facilities' foundations, basements and underground utilities in place. The remaining structures would go through a final closure when the area undergoes environmental restoration. Refer to Section 3.2, Decommissioning Overview, for further information on the basement.

1.1.2 NATURE OF CONTAMINATION

The major contaminant of concern in the 779 Cluster is plutonium 239. Plutonium was introduced into the 779 Cluster to complete experiments related to the earlier RFETS mission of weapons production. Presently, the plutonium is in an oxidized state and distributed throughout several rooms and systems. The estimated amount of Plutonium contained in the 779 Cluster is 4,377 grams but due to measurement uncertainties, there may be as much as 7,695 grams. The location of the material has been identified by completing non-destructive assay of the gloveboxes, B- boxes, the ventilation system, and related piping systems. A summary of plutonium concentration and location, by room, is contained in Appendix C, "779 Cluster Characterization and Work Summary Matrix." Plutonium emits alpha and neutron radiation as it decays. The radiation levels in the 779 Cluster associated with plutonium is a minor radiological hazard (< 1 millirem) in its current location and form.

Primary contaminants of concern have been identified for the 779 Cluster. They are plutonium, americium, uranium, lead, asbestos, beryllium and Polychlorinated biphenyls (PCBs). The basis for identification of these contaminants has been evaluation of process knowledge and the building specific Waste Stream Residue Identification and Characterization (WSRIC), review of analytical data and radiological surveys, and facility walkdowns. Available radiological survey information, as well as additional survey data generated during deactivation of the 779 Cluster has been reviewed and considered in the contaminant evaluation process.

The health hazards associated with the primary contaminants of concern are described below. In addition, controls and mitigation methods are briefly discussed.

Plutonium

Plutonium is a radioactive, silvery, metallic transuranic element that was used in weapons production at RFETS. It is considered a human carcinogen and is toxic to the human system in relatively low doses. The carcinogenic properties of plutonium are attributed to the disruption of human tissue incurred by alpha particle bombardment. The amount of tissue damage is relative to the particle size and the energy released to the tissue. Tissue damage associated with exposure to plutonium is generally caused by inhalation, injection and absorption. Plutonium is specifically absorbed by bone marrow upon entering the body. The overall toxicity is chiefly attributed to the radioactive properties of plutonium.

Americium

Americium is a white transuranic metal element that was used in the production of weapons at RFETS. It is considered a human carcinogen and is toxic to the human system. Health effects associated with exposure to americium are increased cancer risk, specifically lung cancer. The toxicity is chiefly attributed to the radioactive properties of americium and inhalation of particulate. The amount of disruption of human tissue caused by alpha particle bombardment is relative to the particle size and energy released to the tissue. Americium also emits low energy gamma radiation. The external exposure and the resulting dose from this gamma radiation may be a health hazard to the worker if present in gram quantities.

Uranium

Uranium is a heavy silvery white metal which was used in weapons production at RFETS. It is considered a human carcinogen and is toxic to the human system. Health effects associated with exposure to uranium through inhalation are increased cancer risk, specifically lung cancer. The toxicity of uranium is chiefly attributed to its toxic effects on the kidneys. Natural uranium standards are based on these properties rather than radiological effects.

The Site Radiological Control Program is responsible for implementing the requirements of 1 0 CFR 835, Occupational Radiation Protection, which include regulatory dose limits and application of the As Low As Reasonably Achievable (ALARA) principal by workers. Because the toxicity associated with these transuranic elements is directly related to personnel exposure, the DOE maintains Site personnel exposure levels well below regulatory dose limits by integrating ALARA into work practices.

An ALARA review will be prepared for the 779 Cluster and dose limits will be identified prior to commencing the decommissioning process. Work activities are planned so that ALARA is integral to the task at hand, thereby limiting exposure to the worker. Administrative, engineering and physical controls will be implemented and are the primary means whereby exposure will be limited.

Lead

Lead is a toxic metal that has been detected in virtually all biological systems. Lead is toxic to most living things and generally acts as a neurotoxin. Neuropathy and hypertension may occur in adults exposed to toxic levels of lead. The level of toxicity is related to the age and circumstances of the effected individual. The primary exposure routes for lead are ingestion and inhalation, while injection is a lesser exposure route.

Occupational Safety and Health Act (OSHA) guidelines will be implemented to minimize worker exposure to lead. Activities will be performed using requirements identified in the 779 Cluster Health and Safety Plan (HASP) and integrated through the Activity Hazard Analysis (AHA) and work control practices.

Asbestos

Asbestos is considered a human carcinogen. Large amounts of inhaled asbestos leads to mesothelioma. Ingestion of asbestos fibers has been linked to cancer of the gastrointestinal tract. When inhaled, fibers remain permanently in the body.

Asbestos exposure limits are regulated by OSHA and are controlled on-Site through procedures and work practices. Characterization, sampling/survey, and abatement will be performed by qualified personnel in accordance with the requirements of OSHA, EPA, and the National Institute of Occupational Safety and Health (NIOSH). The clearance standard or maximum allowable asbestos level (MAAL) for areas after abatement is performed, for which the 779 Cluster project will adhere to, is as follows:

- 0.01 fibers/cc utilizing the phase contrast microscope means of analytical technique
- 70 structures/mm utilizing the transmission electron microscopy technique

Beryllium

Beryllium is a lightweight, corrosion-resistant, rigid, steel-gray metallic element that was used in weapons production at RFETS. Beryllium is considered a human carcinogen. Inhalation of beryllium particulate has been attributed to lung cancer and berylliosis, an acute pulmonary disease.

Beryllium particulate is controlled at RFETS through housekeeping and air monitoring. Work areas and equipment where beryllium has been identified or suspected of being present will be surveyed prior to disruption or removal of such items or surfaces. Housekeeping will be performed by trained personnel, wearing the appropriate personnel protective equipment (PPE), in the event that beryllium contamination levels are exceeded. The RFETS surface contamination housekeeping limit for beryllium of 25 pg/ft2 Will be maintained while the project is completed. An airborne limit of 0.5 pg/M3 will also be maintained while completing the project. These limits are identified in RFETS procedure 1-15310-HSP-13.04, "Beryllium Protection."

Current RFETS practice for protecting personnel from beryllium is to utilize the ALARA principle. This includes using engineering controls to minimize exposure, medical screening of personnel, and the reduction of limits and the proposed establishment of lower action levels. The limit for beryllium is currently being reviewed and a lower action level is being considered to ensure worker safety.

Polychlorinated Biphenyls

Polychlorinated biphenyl, also referred to as PCB, is a term given to a series of chemical compounds produced industrially by the chlorination of biphenyl with anhydrous chlorine and iron filings or ferric chloride as a catalyst. PCBs have been linked to liver damage and to a lesser degree, kidney damage.

Human exposure levels to PCBs are regulated by OSHA. OSHA guidelines will be implemented, as appropriate, to minimize worker exposure to PCBs. Other than the potential for PCBs in oil (contained in equipment), adhesives and paints (in high temperature areas) and lighting ballasts, no additional contamination is suspected. In any event, OSHA guidelines will be implemented, where PCBs are identified, and the appropriate personal protective equipment (PPE) will be donned by workers. The 779 Cluster project will manage all materials <50 ppm PCBs as non-Toxic Substances Control Act (TSCA) regulated.

In addition to identification of the primary contaminants of concern, the general location of these contaminants is summarized below.

Contaminant		Location
Plutonium	-	Interior of gloveboxes and ventilation systems, isolated locations on building surfaces
Americium	-	Interior of gloveboxes and ventilation systems, isolated locations on building surfaces
Uranium	-	Interior of gloveboxes and ventilation systems, isolated locations on building surfaces
Lead	-	Painted surfaces, lead bricks and shielding
Asbestos	-	Thermal system piping insulation, transite, tile, adhesive
Beryllium	-	Building and equipment surfaces
PCBs	-	Electrical lighting ballasts, paints, oils, tar, adhesives (high temperature areas)

As surface areas in the facility become accessible or hazards are removed as a result of the decommissioning process, additional in-process characterization will be performed. In the event that other contaminants are identified during the in-process characterization process., the contaminants will be evaluated with respect to worker health and safety, and facility decommissioning criteria. The resulting evaluation may result in any of the following: additional or fewer health and safety related precautions taken by workers, engineering changes, or implementation of a different decommissioning process.

The 779 Cluster Decommissioning Project Specific Health and Safety Plan focus on the specific safety concerns (chemical, radiological, industrial and hazardous) in the 779 Cluster which exist or are created during the decommissioning process. It describes the controls and monitoring programs to be utilized during the decommissioning of the 779 Cluster which will ensure protection of the decommissioning employees, surrounding workers, the public and environment from hazards during the decommissioning process. The program will be implemented in accordance with all appropriate Applicable or Relevant and Appropriate Requirements (ARARS), OSHA standards and in accordance with the appropriate Site specific plans and procedures.