

PROJECT MANGEMENT PLAN EXAMPLES

Safety Integration - Authorization Basis Evaluation Examples

Example 15

9.0 AUTHORIZATION BASIS

9.1 CURRENT STATUS

The 9206 Complex (Buildings 9206, 9616-4, 9720-17, 9767-2, 9768, 9723-23, 9770-6 and -7, 9770-07, and 9510-02) is categorized as Hazard Classification; Moderate Hazard/Category 11 Facility with sponsorship of Y-12 Defense Programs. DOE communicates the approved authorization basis to LMES Y-12 Site and approves all modifications to the basis set. LMES submits modifications to the authorization basis through the Y-12 DOE Site Office.

The following documents comprise the approved authorization basis for 9206 Complex in its current status of warm standby, in-process storage:

<i>Y/MA-6290</i>	<i>Final Safety Analysis Report for Y-12 Chemical Processing Systems, Building 9212 and 9206 (U) 04/82-CRD</i>
<i>YSO-SER-048, Rev. 0</i>	<i>SER for the USQ, Discovery of Discrepancies in Evacuation Audible/Visual Alarm Coverage Drawings (B2E-97-USQD-028) 01/98 – (U)</i>
<i>Y/MA-6296, Rev. 2</i>	<i>Operational Safety Requirements for Y-12 Chemical Processing Systems, Building 9206 05/97 – (U)</i>
<i>Y/TS-852, Rev. 3</i>	<i>Operational Safety Requirements for the Recovery Furnace Operations in Building 9206 06/97 – (U)</i>
<i>HS/4/F/3,(11/19/90)</i>	<i>Phase I Hazard Screening Analysis for the Building 9206 Enriched Uranium Recovery Operations, Including HF Facility (U) 07/91-(CRD)</i>

Work on an updated authorization basis (PHA, BIO, and OSR) and FH-A for the 9206 Complex has been initiated and is proceeding per agreement with DOE on the scope and schedule. The FHA, Y-12 FPE-FHA-005-98, Rev.0, *Fire Hazards Analysis For Building 9206*, was issued September 1998.

9.2 DEACTIVATION IMPLEMENTATION STRATEGY

The 9206 staff and deactivation team will ensure that a comprehensive safety authorization basis is 'in place so that deactivation activities will be conducted safely and within an acceptable defined risk. Continued maturation of the Y-12 ISM program, utilization of lessons learned from the resumption of EUO operations in the 9212 and 9215 complex, and implementation of the ISM program for 9206 complex will contribute to and strengthen this basis. The strategy for development of the safety authorization basis for 9206 deactivation activities is described below.

First, during the deactivation planning stage the expected deactivation activities, including those of greatest potential hazard and greatest risk to the public or the environment, are being identified. An integrated, multi-disciplined team is thoroughly evaluating each area of the 9206 Complex to identify the resident hazards and expected deactivation activities. Deactivation activities will be evaluated or "screened" against the current authorization basis listed above. The results will determine those deactivation activities that fall within the scope of the current authorization basis and will allow the planning team to prioritize those activities that can and need to be performed early in deactivation, i.e. prior to completion and approval of the updated authorization basis. The unreviewed safety question (USQ) process will be utilized to gain DOE approval prior to performing a deactivation activity that is not covered by the current authorization basis but must be performed for safety reasons prior to implementation of the 9206 BIO and OSR, i.e. for "Urgent" or high-risk reduction activities. The authorization documentation for these key activities will be developed in parallel with completion of the BIO.

Second, the existing authorization basis will be updated for current building conditions and operations as well as for deactivation activities, as described above 'in Section 9. 1. The key elements and status are described below:

- PHA - The PHA is being developed for the 9206 Complex in conjunction with deactivation planning. It will evaluate the current building status and operations, including SNM storage and recovery furnace operations. It will also incorporate the expected deactivation tasks of greatest risk as identified during space/system and equipment deactivation walk downs.
- FHA - The FHA is required for the accident analysis in the BIO.
- BIO - The 9206 BIO will be developed based upon the PHA and FHA. It will address current storage and operations, and planned deactivation activities to the extent possible. Unanticipated deactivation activities identified after approval and implementation of the BIO will be addressed through the USQD process with supporting safety analyses, as required.
- OSR - An OSR will be developed to incorporate the necessary controls identified from the PHA and BIO, including controls required for deactivation activities. Additional revisions will be made, as needed, for specific, new deactivation activities not already covered.
- Authorization Agreement - An authorization agreement will be developed to reflect facility requirements related to deactivation operations.

Deactivation will be implemented under the above stated authorization basis. However, deactivation is a very dynamic process and by its very nature will continually alter the configuration of the 9206 Complex. As deactivation proceeds and new tasks are developed and hazards are reduced; the PRA, BIO, OSR, and FHA will be evaluated and updated as needed. USQDs with supporting safety analysis will be developed for new, unanalyzed clean out activities and then incorporated into the BIO during its annual update. Any positive USQ's will be submitted to DOE for approval at the time of identification. Any identified OSR changes will be made and approved by DOE prior to the activity in question being performed or prior to deleting an existing control due to reduced hazards. This iterative process will require the ongoing involvement and participation of the EUO facility safety staff, NCSO staff, the 9206 YSO facility representative, YSO DOE Office, and 9206 staff.

The 9206 facility safety controls, established in the 9206 facility OSR and BIO, are expected to change throughout the life of the deactivation project, due to changing hazardous substances inventories, uncertainties, and new activities. These changes will range from modifying or eliminating existing project progresses and hazardous substances are removed it is expected that there will be less reliance on facility design and administrative controls. Criteria will be developed to determine when and if it is appropriate to retire a control. The conditions for elimination of a control will be incorporated into the facility OSR. **NOTE** : It will be important to ensure that controls are not retired too early.

9.3 POST DEACTIVATION (S&M) STRATEGY

As hazards are eliminated/reduced, so too is the need for mitigating S&M activities. Minimal, residual hazards will remain in the 9206 Complex once deactivation is complete and the S&M phase begins. The safety documentation for the 9206 Complex will be updated to reflect the final post deactivation condition. Evidence of the removal of the hazardous material inventory will be required to reduce the hazard category.

10.3 NUCLEAR CRITICALITY SAFETY STRATEGY

Current Status The 9206 facility is currently covered only by CSAs under the Y-12 Plant NCS program for the handling, storage, and processing of enriched uranium. This includes a combination of active, for in-use processing equipment/systems and suspended for processing equipment/systems deemed no longer needed but still containing significant quantities of fissile material (greater than 700 g U²³⁵). The CSAs for some equipment/systems, which were cleaned prior to the 1994 stand down (contain contamination quantities of fissile material), were canceled and the equipment/systems were placed out of service and tagged as abandoned in place. The 9206 Complex currently has 31 active CSAs and 21 suspended CSAS.

CSAs/CSRs are reviewed by the criticality safety representative at least annually in accordance with Section 4.1.6 of ANSI/ANS-8.1-1983, *American National Standard for Nuclear Criticality in Operations with Fissionable Materials Outside Reactors* During this review, process conditions may be evaluated to ensure that underlying assumptions and conclusions of the supporting double contingency analysis remain valid.

The annual CSA/CSR review may also be used to determine whether CSAs/CSRs should be suspended, canceled, or consolidated to reduce the total number of CSA/CSR documents. Several annual reviews performed recently suggested that some existing approvals were no longer necessary and could be canceled and still other approvals could be consolidated. These walk downs also revealed the presence of required signs on equipment with canceled CSAS. Per Y70-160, *Criticality Safety Approval System*, these signs will be removed as part of deactivation activities.

The 9206 uranium recovery furnace may become operable while deactivation of portions of the facility not involved with the uranium recovery furnace is proceeding. Preparation activities [including revision of uranium recovery furnace CSAs and stamp of support processes such as wet chemistry/decom (wet hood), dry hood/repackaging glovebox and dry vacuum systems] are underway and will also support deactivation activities.

Material transfers occurring within the 9206 Complex are performed by a number of different methods. Dollies designed to provide safe spacing of fissile material containers are used to perform the majority of the container transfers. Personnel are also permitted to transfer single fissile material containers by carrying them. Process material transfers are accomplished with pumps and airlifts. A security equipped vehicle "SNM Transport Vehicle" provides material transfers to 9212 and other secure areas.

Deactivation Strategy

The nuclear criticality deactivation end state objective is to achieve a quantity, form and distribution of fissile material such that criticality is not credible during the post-deactivation S&M phase. The facility end state, with regards to fissile material will require an integrated strategy between NCSO, NMC&A and Security disciplines. If criticality is not incredible during S&M, quarterly surveillance as specified in Section 1, may not be adequate.

To achieve the criticality end state objective, the clean out strategy is:

- identify system boundaries; physically isolating the system from other processes so that it is not possible for holdup material to transfer from one deactivated component to another;
- remove fissile material;
- perform NDA measurements on the equipment;
- ensure the form of the material cannot change; and
- leave equipment in a state as to ensure that the area isolation remains in tact.

The Y-12 NCS program was established for operating nuclear facilities. To ensure compliance with Y70-150, *Nuclear Criticality Safety Program*, and Y70-160, *Criticality Safety Approval System*. NCSO staff will review the procedures' applicability to deactivation activities and initiate revisions as required. The Y-12 NCSO staff is an active part of all 9206 operations; including plan of the day, crew brief, and deactivation planning. They have been a key participant deactivation walkdowns, tabletop analyses, and task team planning, all of which will continue into the deactivation implementation phase.

Based upon the NCSO staff review of CSA/CSRs, those CSAs/CSRs, which are no longer necessary, will be canceled and/or consolidated where possible. Remaining active and suspended CSAs/CSRs will be canceled as specific areas and systems are cleaned out. New CSAs/CSRs will be written and approved as needed to support specific deactivation and uranium recovery furnace activities. This will be a graded approach depending on the complexity of the hazard and removal process. It is estimated at this early stage that deactivation activities may be covered by modifying existing suspended CSAs or generating new generic CSA or CSRs which can further support wet and dry material removal operations.

The NCSO staff will help determine the strategies for ENS/CAAS elimination, nuclear material holdup characterization and clean out (including uranium recovery furnace clean out, process exhaust duct work, and process piping/tanks), MAA elimination, and achievement of end point criteria.

Post Deactivation Strategy

Once the combined NMC&A, NCS, and security facility end points for deactivation have been achieved and the building is locked, except for entry to perform a quarterly surveillance; it is expected that there may be a small inventory of fissile material as equipment holdup which will be removed upon actual D&D of the facility. To protect against unforeseen changes in the location and form of the holdup, guidelines include checking for evidence of water leakage in process equipment and drainage of material possibly containing holdup into unfavorable geometries. Controls will be established to ensure that the area isolation remains intact. The nuclear material equipment holdup characterizations performed for deactivation will facilitate future D&D efforts.

11.4 DEACTIVATION AND POST DEACTIVATION SAFETY DOCUMENTATION

Annual update of the authorization basis will be prepared based upon the USQ process and deactivation progress. It is anticipated that deactivation will proceed in stages, dependent upon available funding; the transition of the 9206 chemical recovery operations to 9212; and Building 9212 readiness to process the 9206 HEU material streams, both stored and generated. The current authorization basis upgrade, including anticipated deactivation tasks and the annual updates, will address deactivation status and progress. It will also minimize efforts for future USQDs.

As deactivation is completed and end points are closed, the safety envelope documentation will be updated to reflect the final facility conditions necessary to prevent or mitigate accident scenarios. This documentation will be developed for the current DOE orders, standards, and other guidance and requirements. It will rely heavily upon the current facility and site safety documentation and will be specific to the 9206 Complex end state activities and conditions.

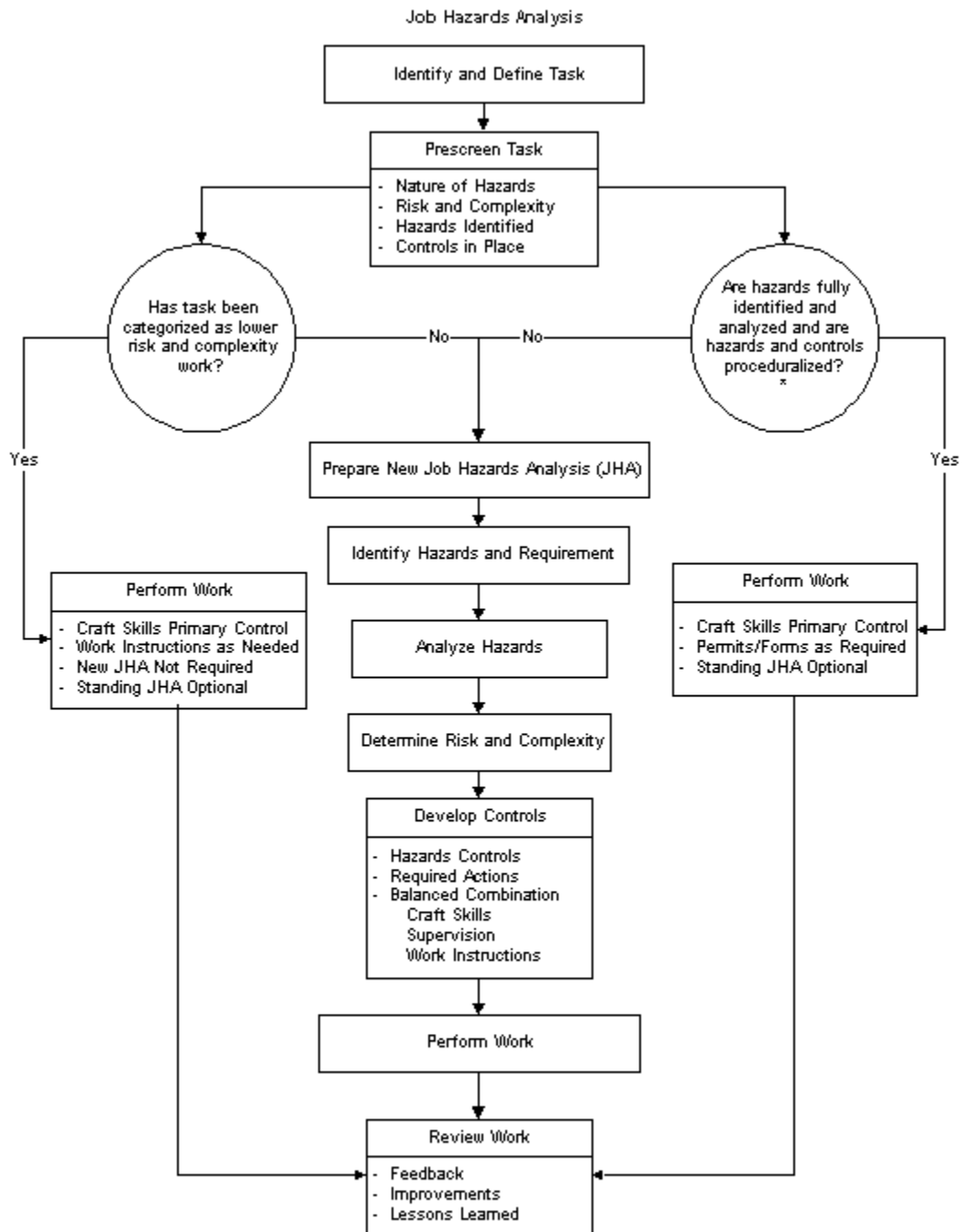
Example 16

10.3 Safety Evaluation of Activities

The existing authorization bases for the 324/327 Buildings Stabilization/Deactivation Project consists of:

- 324 Building
 - HNF-SD-SPJ-SAR-001, Safety Analysis Report For 324 Building
 - HNF-SD-SPJ-OSR-001, 324 Building Operating Limits
- 327 Building
 - HNF-SD-SPJ-SAR-002, 327 Building Safety Analysis Report
 - HNF-SD-SPJ-OSR-002, 327 Building Operating Limits

Figure 10-2. Job Hazard Analysis Process



* Procedure must be compliant with Technical Procedure Standard, WHC-CM-5, Section 12, having incorporated hazards and controls from a through hazard analysis process.

The documents were administratively updated to reflect PHMC high-level policy and procedures in September 1997. The origins of the authorization bases were to provide guidance documentation for PNNL during building operations, and with the changed mission from operating to deactivation, technical upgrade of the authorization bases has been planned. Contractor approval of the upgrade of the authorization bases is projected for April 1999.

A multi-tiered, comprehensive (and required) USQ evaluation process has been developed and implemented that will support the diverse deactivation and risk reduction activities (e.g., 324 Building B-Cell Cleanup Subproject). The process includes an overview of all work tasks and procedure changes triggering subsequent USQ screening and evaluations of appropriate procedure changes, work

evolutions, or building modifications. The process has been documented in HNF-IP-1264, 324/327 *Facilities Stabilization Projects Administration Manual*, Section 2.7.

10.4 Transition and Post Transition Safety Documentation

An annual update of the authorization bases will be prepared, based on the rigorous USQ process and progress with deactivation. The authorization bases upgrades and annual updates will address deactivation status and minimize efforts for the future USQ determination.

As one of the conditions for transfer to the Hanford Surplus Facilities Program, the safety documentation will be updated to reflect the current building conditions and controls necessary to prevent or mitigate accident scenarios. Both buildings are expected to become categorized as 'radiological' buildings. Based on the categorization, the appropriate safety documentation for surveillance and maintenance will be provided. The documentation will be developed per the current DOE Orders, standards, and other guidance and requirements. The documentation will rely heavily on the current building and Hanford Site safety documentation, and will be specific to the buildings endpoint activities and conditions