

## **Attachment 3**

# **Nuclear Facility Assessment Reports**

## **Nuclear Facility Safety Assessment for LLLW Operations at ORNL**

### **1. Facility Overview (Description, Categorization, and Ongoing & Planned Activities)**

The LLLW System neutralizes, concentrates, transfers, and stores aqueous radioactive waste solutions from various sources at ORNL. The sources of these waste solutions are "hot" sinks and drains in research and development laboratories, radiochemical pilot plants, and nuclear reactors located in both Bethel Valley and Melton Valley.

This review covered the following facilities: Monitoring and Control System 2099 for Building 2026 (Cat 3), Evaporator Facility, Building 2531 (Cat 2), Monitoring and Control System 7966 for the Radiochemical Development Center (Cat 2), Inter-Valley Transfer Lines and Valve Boxes (Cat 2), Bethel Valley Collection Header and Valve Boxes 1, 1A, 2, 3, and 3A (Cat 3) and the Waste Operations Control Center. These facilities, which represent a subset of the LLLW System, were picked for review due to the fact that the system provides on-going treatment and storage in support of critical missions from the Office of Science and Environmental Management. In addition, operation of the LLLW System is critical to maintain compliance with the Clean Water Act and to protect the public and the environment.

The Safety Basis Documents associated with the reviewed facilities are listed below. Other facilities which make up part of the LLLW System were not included in this review either because they are inactive or will not be needed in the near term. The facilities which were not part of this review are the Transported Waste Receiving Facility (Cat 3), Melton Valley Storage Tanks (MVST) (Cat 2), and the MVST Annex (Cat 2).

### **2. Summary of Assessments and Reviews**

#### **Safety Basis List/Status**

- Phase I SARUP Hazard Screening for the Liquid Low-Level Waste Management Systems, HS/LLLW/F/1/R3, 3/1/2000
- Basis for Interim Operation - Liquid Low-Level Waste Management Systems, ORNL/WM-LGWO/LLLW/BIO/R1, 11/17/1997
- System Safety Analysis - Monitoring and Control Station (Building 2099), WM-LGWO-2099-SSA-R1, 12/21/1996
- Operational Safety Requirements for the Liquid Low-Level Waste System, WM-LGWO-LLLW-OSR-R12, 12/20/2001
- System Safety Analysis for the MV LLLW CAT Upgrade Project (Bldg. 7966), SSA/7966-WMRAD/SSE/R0, 8/15/1997
- Positive USQD Change Package for Increase in Transfer Pump Flow in the Monitoring and Control Station for Buildings 7920 and 7930, WM-LGWO-USQD-

1997-17, 2/3/1998

### Safety Basis Flow-down Assessment

DOE ORO developed a Safety Basis Flowdown Review Package (SBFRP) for LLLW operations at ORNL on February 8, 2002. The team concluded in part that:

- The methodology and documentation supporting the SBFRP does not contain any known or suspected discrepancies.
- There were no additional hazardous materials or conditions noted during a walk down of the facility.
- There were no problems found with the nuclear hazard identification documented in the facilities authorization basis.
- The team agrees with the Hazard Classification.
- No discrepancies were noted between the SBFRP and the current approved safety basis.
- The safety basis documents are fully sufficient for the execution of the work currently happening within the system.
- All OSR/TSR requirements flowed down to at least one procedure.
- There are no conflicts between the DOE HQ Independent Safety Basis Assessment report and the SBFRP.

BJC issued its own Safety Basis Flow-down Safety Assessment for the ORNL Liquid and Gaseous Waste Operations (LLW) on January 22, 2002. The ORNL Liquids and Gaseous Waste Operations were reviewed as part of an assessment of all nuclear category 2 and 3 facilities. The following areas were reviewed:

- Hazard categorization
- Flow-down for safety basis requirements to procedures
- Field implementation of safety basis-related requirements
- Knowledge, training, and qualification of facility management responsible for maintaining operations in accordance with safety basis controls, and
- Flow-down of requirements to subcontractors.

The BJC review concluded that the facility categorization was correct, documentation existed to support the categorization and that there were no significant questions or concerns with operational safety.

Findings and observations for the BJC assessment have been entered as issues into the BJC I/CATS system. The following are findings/observations, corrective actions and status:

Finding: TSRs WM-LGWO-7856-TSR-R3, WM-LGWO-2649-TSR-R3, and TSR-LGWO-7877-TSR-R1 do not include an appendix for facility design features for safety as required by DOE Order 5480.22.

Corrective Action: A 10 CFR 830 compliant SAR/TSR for the ORNL LLLW System is scheduled for issue to DOE by 01/30/03. If design features are in a DOE-approved SAR, this Appendix is not required.

Status: Open and in progress.

Observation: No flow-down of the requirement to not transfer when Vault Plug is removed.

Corrective Action: Procedures have been modified to include flow-down requirement.

Status: Open; corrective action is complete and documentation is being processed for closure.

Observation: No validation of program adequacy of a service contractor.

Corrective Action: WESKEM program adequacy has been validated through BJC's Waste Disposition subcontract. BJC purchases services from UT-Battelle via the Master Agreement for Services with services provided through UT-B's prime contract.

Status: Closed; no corrective action required.

Observation: BJC STR and Staff Training on SB documents lacks formality.

Corrective Action: The Bechtel Jacobs ISMS revalidation effort is addressing safety basis training on a programmatic basis.

Status: Closed at this level, the BJC program level effort is under HAZ.A-3-OFI.2.

Observation: Authorization Agreement not consistent with safety basis documents.

Corrective Action: The ORNL LLLW System Authorization Agreement will be revised and issued to DOE by the end of March 2002.

Status: Open, in progress.

Observation: Unnecessary delays existed in processing findings and corrective actions.

Corrective Action: Findings and corrective actions are processed per BJC-PQ-1510.

In addition, BJC has established a Safety Basis Review Board which reviews/approves corrective actions relating to safety basis documents.

Status: Closed.

### **DOE HQ Independent Safety Basis Assessment**

DOE Headquarters issued its final Independent Safety Basis Assessment report on January 31, 2002. The assessment did not identify any compensatory measures for the ORNL LLLW Management Systems. DOE concluded in part that Airborne Release Factors used in the hazard categorization "seem reasonable", criticalities are "incredible", implementation of controls is "appropriate", and the sense of overall risk is "low".

### **Safety Management Programs (SMPs)**

The DOE team reviewed the safety management programs in the following areas: fire protection, nuclear criticality safety, and emergency management. No issues were noted in any of the three subject areas reviewed. A meeting had just been completed with the DNFSB regarding the potential criticality issues in the LLLW system with no findings. A review of the Fire Hazards Analysis and walk down of a portion of the system resulted in no deficiencies. In addition, a review of the emergency management program resulted in no deficiencies. This qualitative review of selected elements of the safety management program indicated that there were no conditions identified for the LLLW system that place workers, public, or the environment at risk.

### **3. Corrective Actions and Compensatory Measures**

No compensatory measures were identified as a result of this review. No additional corrective actions beyond those previously identified and tracked by BJC were identified for the LLLW system.

### **4. Adequacy of Safety Basis**

The DOE HQ Safety Basis Assessment, the BJC Safety Basis Flow-down Safety Assessment, and the DOE ORO Safety Basis Flow-down Review Package indicate that LLLW operations at ORNL are safe for continued operations.

**NUCLEAR FACILITY SAFETY ASSESSMENT  
7823B,C,D Waste Storage Facilities**

**1. Facility Overview**

**Facility Description**

Three pre-engineered (RUBB™) fabric buildings over gravel pads. They are used to store solid LLW in B-25 boxes and 55 gallon drums. The dimensions are approximately 31 X 50 feet. The three buildings are located adjacent to each other separated by about 5 feet.

**Facility Categorization**

The facility is categorized as Category 3 Nuclear Facility per the requirements of DOE-STD-1027-92. The design analysis calculation established revised Category 2 thresholds for these facilities (see Issue #1 in Safety Basis Flowdown Assessment)

**Ongoing and Planned Operations**

The buildings presently contain LLW in B-25 boxes and 55 gallon drums. The facilities were selected for the Safety Basis Flowdown Assessment because they provide critical storage for LLW generated as a result of on-going Office of Science operations at ORNL. EM collects and transports waste from ORNL on a weekly basis to preclude adverse impacts to ORNL operations.

**2. Summary of Assessments and Reviews**

**Safety Basis List/Status**

ORNL/WM-RSWOG/RSWSF/SAR/R0-1, Safety Analysis Report for the Radioactive Solid Waste Storage Facilities, Buildings 7823B, C, D, E; 7831A; 7831C; 7842; 7842B, C; 7878; 7878A; 7879; 7934; 7572; and 7574, May 20, 1998.

ORNL/WM-RSWOG/RSWSF/TSR/R0-1, Technical Safety Requirements for the Radioactive Solid Waste Storage Facilities, Buildings 7823B, C, D, E; 7831A; 7831C; 7842; 7842B, C; 7878; 7878A; 7879; 7934; 7572; and 7574, May 20, 1998.

Safety Evaluation Report (SER), Review of Safety Analysis Report and Technical Safety Requirements Documents for the Radioactive Solid Waste Storage Facilities, ORNL/WM-RSWOG/RSWSF/SAR/R0-1 and ORNL/WM-RSWOG/RSWSF/TSR/R0-1, April 27, 1998.

**Safety Basis Related Documents used in this review**

DAC-AX2826-SSE-001, Inventory Limits Based on Direct Exposure Consequences, Lockheed Martin Energy Systems, Inc. Oak Ridge, Tennessee, Rev. 1, January 31, 1997.

WD-CAL-001, Revised Category 2 Threshold Quantities for Waste Disposition Facilities, November 16, 2000.

NCSD-OR-LLW-0010, Nuclear Criticality Safety Determination for LLW Transport and Storage in 7823B, 7823C, and 7823D, August 3, 2001.

SCR-ORNL/WM-RSWSF/001/R0, Evaluation of Off-Site Shipment of Filter Cake Waste, January 15, 1999.

USQD-OR-MN-53-0052, Rev. 0, Unreviewed Safety Question Determination Issue of Calculation (USQD) WD-CAL-001, Revised Category 2 Threshold Quantities for Waste Disposition Facilities, January 22, 2001.

WESKEM-USQD/ORNL/RSWF-1/R0, USQD Change Package for the Storage of Waste Outside, Adjacent to the Radioactive Solid Waste Storage Facilities, April 27, 2001.

PSW-OR-X501.2-0018, Screening Worksheet, Revision 2 of WD-OP-X501.2, Review and Inspect Radioactive-Contaminated Waste at ORNL, April 19, 2001.

WD-OP-X501.2, Rev. 2, Review and Inspect Radioactive-Contaminated Waste for acceptance at ORNL, April 20, 2001.

WD-WM-SWO-501.36, Rev. 2, Non-RCRA Above Ground Facilities Operations, January 24, 2000.

### **Review Activities**

#### **Safety Basis Flowdown Assessment:**

Issue #1 - ORNL used alternate release fractions to recalculate the threshold values from DOE-STD-1027-92 and then used the modified numbers for hazard categorization. The basis for this recalculation was questioned.

Issue #2 - The three buildings were previously segmented for purposes of hazard categorization. This was determined to be inappropriate based on their proximity to one another in the fire scenario.

Issue #3 - The system used to calculate and control the radionuclide inventory was questioned for not being validated or verified.

Issue #4 - The SAR specifies four types of waste, which are used to determine the release fraction in the dispersion models. These were not flowed down through the procedures, although they appear to be tracked sufficiently for the radionuclide inventory, and they are captured in the waste profiles. Primarily the Bechtel Jacobs subcontractor has used the most conservative waste form/category when calculating the radiological inventory.

Issue #5 - The SBDs were identified as being out of date.

Issue #6 - The SAR evaluates handling and earthquake accidents and assumes that 10% and 23% of the containers, respectively, are breached. This was questioned based on a scenario that could result in a rupture of a larger percentage of containers than previously calculated.

Issue #7 - The procedures control many SBD related items, such as stacking height. These items need to be controlled in the procedures to make sure that they are not changed without the proper safety basis review.

#### **DOE HQ Independent Safety Basis Assessment**

There were no facility specific findings or observations from the DOE HQ Independent Safety Basis Report. The general concerns about the use of Alternate Release Fractions for the wastes, the adequacy of the hazard evaluation, and the selection of controls, are applicable to these facilities.

### Safety Management Programs (SMPs)

No corrective actions or compensatory measures were identified as a result of a qualitative review of the emergency management, criticality safety or fire protection programs.

### 3. Corrective Actions and Compensatory Measures

Corrective Action/Compensatory Measure #1 - Bechtel Jacobs is reevaluating the hazard categorization for Category 3 and below nuclear facilities. This reevaluation will be completed by March 28, 2002.

Corrective Action/Compensatory Measure #2 - The Facilities are now considered as one facility for purposes of hazard categorization. The inventory sum of the fractions was recalculated based on this to ensure that the facility remained a Category 3. This corrective action is considered closed.

Corrective Action/Compensatory Measure #3 - A "Technical Assessment, Hazard Categorization of Bechtel Jacobs Waste Disposition Project Waste Storage Facilities" has been completed. Building 7823 C&D were evaluated and no issues were identified for these buildings. A new system, Facility Acceptance Testing/Container Analysis Tool is being instituted to calculate and control radionuclide inventory. This system will be validated and in place by July 26, 2002.

Corrective Action/Compensatory Measure #4 - A corrective action is being undertaken to add information on the 2109 data package to provide sufficient particulate loading information for newly generated waste going into storage. This action will be completed by May 31, 2002.

Corrective Action/Compensatory Measure #5 - Bechtel Jacobs is preparing an upgraded Documented Safety Analysis for these facilities for submittal to DOE by June 30, 2002.

Corrective Action/Compensatory Measure #6 - The need for additional measures to preclude an accident capable of breaching more than 23% of the containers is presently being evaluated and will be completed by March 29, 2002. Barriers have been placed along side the road next to the facilities to prevent a truck from accidentally impacting the facility. This compensatory measure has been verified by Federal staff and will stay in place until the evaluation is complete.

Corrective Action/Compensatory Measure #7 - The SB requirements in the procedures are marked, such that they can not be changed without undergoing an appropriate review, in accordance with the document control protocols. This corrective action is considered closed.

### 4. Adequacy of Safety Basis

The existing safety basis documents in conjunction with the operating procedures for the facilities provide an adequate basis for continued operations of these facilities. Even though the safety basis documents are dated, the operations performed and the hazards analyzed are still consistent with the present operations.

# NUCLEAR FACILITY SAFETY ASSESSMENT

## Molten Salt Reactor Experiment

### 1. Facility Overview

#### Facility Description/Categorization/Ongoing & Planned Operations

The Molten Salt Reactor Experiment (MSRE) was a 8 MW reactor. The molten salt fuel was drained into tanks at the facility. The piping connections between the tanks and core have been cut and capped. Problems associated with uranium migration out of the drain tanks have been addressed in the last several years by installation of a Reactive Gas Removal System (RGRS) which continues to operate. Continued operation of these gas collection and capture systems is a key element of the Department's ongoing mission to safely maintain the reactor pending plans to remove the fuel salt from the drain tanks and decommission the facility. This facility was selected for review as a critical facility to ensure uninterrupted operation of the RGRS and other facility maintenance activities. The MSRE is a Category 2 facility.

### 2. Summary of Assessments and Reviews

#### Safety Basis List/Status

ORNL/BIOMSRE/R1.1, "Basis for Interim Operation: Molten Salt Reactor Experiment Facility", 1/4/99

TSR/7503-ERP/003/R1, "Technical Safety Requirements, Molten Salt Reactor Experiment Facility", 3/24/00

ORNL/MSRE/TSRCHG/001/R0.1, "TSR and BIO Change Control Document, Molten Salt Reactor Experiment Facility", 3/24/00

SSA/7503-ERP/003/R0, "System Safety Analysis, Molten Salt Reactor Experiment Facility, Reactive Gas Removal System", 10/22/96

MSRE-SER-001, "Safety Evaluation Report, SSA and TSR for the Molten Salt Reactor Experiment Facility Interim Vent and Trap Operation at the ORNL Site", 10/8/96

MSRE-SER-005, "Review of Revised Basis of Interim Operations and Technical Safety Requirements Documents for the Molten Salt Reactor Experiment Facility Building 7503 at ORNL", 1/4/99

MSRE-SER-007, "Review of Request for Approval of Technical Safety Requirements and Basis for Interim Operations Control Change Document, MSRE", 3/24/00

SER-7503-NSD-01-05, "Safety Evaluation Report for Building 7503, USQD Change Package," 3/23/01

## **Facility Review**

On February 8 and 11, 2002, a DOE ORO EM team consisting of the DOE EM team lead, the facility project manager, the Facility Representative, and DOE Subject Matter Experts in the areas of Nuclear Criticality Safety, Fire Protection and Emergency Management evaluated the MSRE for the purpose of evaluating fitness for continuation of operations. The team conducted a walk down of the facility, interviewed BJC project managers and operators, and reviewed recent facility safety related review activities conducted by BJC as part of BJC's Safety Basis Flowdown Assessment (SBFA) and the DOE HQ Independent Safety Basis assessment. ORO review of the BJC SBFA Report concluded that, given the current and planned operations at the MSRE and the procedures in place, compensatory measures are not necessary to address the issues in the BJC SBFA while a corrective action plan is developed and implemented. (All issues and corrective actions that resulted from the BJC SBFA are being tracked by BJC.)

In addition to the issues that were found by BJC during their SBFA, the DOE review team noted the need to determine whether the criticality alarm system is a safety significant system. The Team observed, however, that the conduct of operations associated with the criticality alarm was what would be expected if the alarm was designated safety significant. Therefore, the Portable Criticality Alarm System (PCAAS) and monitron operability checks and associated alarm emergency response actions should be considered compensatory measures that cannot be changed without DOE approval. This will be required until the need to consider the PCAAS a safety significant system is re-evaluated by the contractor and approved by DOE. This may be re-evaluated either during a special review or during the review of the update of the BIO/TSR which is scheduled to be issued by June 30, 2002.

## **DOE HQ Independent Safety Basis Assessment**

The report from the DOE HQ Team noted the following:

The hazard evaluation, while adequate, is not in DOE-STD-3009 format. This should be addressed in the BIO/TSR update scheduled for June 30, 2002.

The adequacy of the control hierarchy i.e., Limiting Conditions of Operations vs. Defense in Depth should be re-evaluated. This should be re-evaluated in the BIO/TSR update scheduled for June 30, 2002.

## **Safety Management Programs (SMPs)**

In the February 8 and 11, 2002, DOE ORO EM Facility Review, the SMPs in the areas of Nuclear Criticality Safety, Fire Protection and Emergency Management were found to be adequate at the MSRE to support safe operations.

## Corrective Actions and Compensatory Measures

### Recommended Compensatory Measure

The required operability checks and associated alarm emergency response actions of both the Portable Criticality Alarm System (PCAAS) and monitron system shall be maintained and cannot be changed without DOE approval. This measure will be maintained until the need to consider the PCAAS a safety significant system is evaluated by the contractor and the results reviewed and approved by DOE.

### Recommended Corrective Action(s)

A corrective action plan needs to be developed and submitted to DOE by May 1, 2002 to address:

- The issues associated with the hazard evaluation (e.g. not in DOE-STD-3009 format.)
- The issues associated with the adequacy of the control hierarchy (e.g., Limiting Conditions of Operations vs. Defense in Depth.)

Evaluate PCAAS to determine if it should be considered a safety significant system and submit the results to DOE for approval by June 30, 2002.

### 3. Adequacy of Safety Basis

All reviews conducted to date support a conclusion that the facility safety basis is adequate for continued operations. These reviews include the "DOE Headquarters Independent Safety Basis Assessment of Bechtel Jacobs LLC and DOE Oak Ridge Operations Office" and the more recent review led by ORO personnel. The conclusion that continued operations should be allowed is also supported by multiple prior review and oversight activities conducted by the project manager, facility representative, and representatives from the Defense Nuclear Facilities Safety Board. The PCAAS and monitron operability checks and associated alarm emergency response actions, however, should be considered compensatory measures that cannot be changed without DOE approval. This will be required until the need to consider the PCAAS a safety significant system is re-evaluated and approved by DOE. This may be re-evaluated either during a special review or during the review of the update of the BIO/TSR which is scheduled to be issued by June 30, 2002.

# NUCLEAR FACILITY SAFETY ASSESSMENT

## Tower Shielding Reactor

### 1. Facility Overview

#### Facility Description/Categorization/Ongoing & Planned Operations

The Tower Shielding Reactor (TSR) is a 1 MW reactor. Currently, the reactor is in a standby mode. This Category 2 facility was selected for review due to the necessity of continuing reactor operations to maintain the capability of operation for possible future use. Continuing operations required by the facility's Authorization Basis include weekly movement of reactor control mechanisms in order to ensure their operability.

### 2. Summary of Assessments and Reviews

#### Safety Basis List/Status

ORNL/RRD/INT-109, Rev 0 "Basis for Interim Operation for the Tower Shielding Facility", 1/21/97

ORNL-TM-4641/R3, "Technical Specifications Tower Shielding Reactor II", 7/23/91

SER-OR-INT109-0024, "Safety Evaluation Report (SER) - ORNL - Basis for Interim Operation (BIO) for the Tower Shielding Facility (TSR), ORNL/RRD/INT-109 R0", 1/21/97

#### Facility Review

On February 8, 2002, a DOE ORO EM team consisting of the DOE EM team lead, the facility project manager, the Facility Representative, and DOE Subject Matter Experts in the areas of Nuclear Criticality Safety, Fire Protection and Emergency Management evaluated the TSR for the purpose of evaluating fitness for continuation of operations. The team conducted a walk down of the facility, interviewed BJC project managers and operators, and reviewed recent facility safety related review activities conducted by BJC as part of BJC's Safety Basis Flowdown Assessment (SBFA) and the DOE HQ Independent Safety Basis assessment. ORO review of the BJC SBFA Report concluded that, given the current and planned operations at the TSR and the procedures in place, compensatory measures are not necessary to address the issues in the BJC SBFA while a corrective action plan is developed and implemented. (All issues and corrective actions that resulted from the BJC SBFA are being tracked by BJC.)

In addition to the issues that were found by BJC during their SBFA, the DOE review team noted that a USQD was not performed in a timely manner for removal of a hazard (Na and LiOH shields) during contractor change. This issue has already been closed by

being addressed in a negative USQD. Also, it was observed that a TSR checklist does not indicate acceptable values for reactor coolant water resistivity. Water resistivity must be maintained at a specified level to prevent long term damage to the fuel (All readings taken in the last two years were noted as acceptable by the team lead.) In addition, a procedure associated with source checks was observed as requiring a revision to clarify the intent of not checking sources that are located in an area that is unsafe for human entry or otherwise inaccessible. These issues require a corrective action plan to be developed. It was concluded that no compensatory measures were required for continued safe operations.

### **DOE HQ Independent Safety Basis Assessment**

The report from the DOE HQ Team noted the following:

The removal of the sodium and lithium shields from the facility are not reflected in the BIO/TSR. Closed-Addressed in a negative USQD.

The Technical Safety Requirements (TSR) note a DOE programmatic responsibility that is now outdated. This should be addressed in the BIO/TSR update scheduled for June 30, 2002.

### **Safety Management Programs (SMPs)**

In the February 8, 2002, DOE ORO EM Facility Review, the SMPs in the areas of Nuclear Criticality Safety, Fire Protection and Emergency Management were found to be adequate at the TSR to support safe operations.

3. **Corrective Actions and Compensatory Measures**

No conditions have been found which call for compensatory measures.

A corrective action plan needs to be developed and submitted to DOE by May 1, 2002 to address:

A DOE programmatic responsibility that is now outdated in the Technical Safety Requirements.

Reactor coolant water resistivity limits being absent on a checklist.

Procedure clarification regarding the need to conduct source checks.

4. **Adequacy of Safety Basis**

All reviews conducted to date support a conclusion that the facility safety basis is adequate for continued operations. These reviews include the "DOE Headquarters Independent Safety Basis Assessment of Bechtel Jacobs Company LLC and DOE Oak Ridge Operations Office" and the more recent February 8, 2002 review led by ORO personnel. No compensatory measures are necessary for continued safe operation.

Nuclear Facility Safety Assessment – Nuclear Facility Interim Safety Basis  
Phase 2 DOE Material Storage Areas (DMSAs) within Fixed CAAS Coverage

## Facility Overview

**Facility Description** – The DOE Material Storage Areas (DMSAs) comprise 160 locations across the plant site where DOE materials have been stored. These areas were designated as DMSAs as the result of a May 1996 agreement between DOE and the United States Enrichment Corporation (USEC) as part of the lease agreement. The creation of the DMSAs was necessary to facilitate Nuclear Regulatory Commission certification of the Paducah Gaseous Diffusion Plant that occurred in March 1997. Currently, there are 70 of the DMSAs designated as Phase 2, which indicates that the DMSAs potentially contain fissionable material based on visual inspection or actual material characterization.

**Facility Categorization** – DMSA are categorized as Category 2 Nuclear Facilities in the *Safety Evaluation Report (SER) for Characterization Activities within DMSAs and C-410 DRA – USQD Number: USQD-RM-DMSADRA-5R2*. The basis for the Category 2 designation is the known/potential nuclear criticality safety hazards. DMSAs may also contain hazardous materials, however, the quantities of hazardous material is below the process safety management thresholds. The hazardous materials are handled in accordance with procedures that implement the Safety Management Programs as part of the Integrated Safety Management System.

**Ongoing and Planned Activities** – Continue characterization of DMSAs for Nuclear Criticality Safety concerns and for materials of environmental concern. The current schedule is for characterization activities to continue through CY 2005.

## Summary of Assessments and Reviews

### Safety Basis List/Status –

Currently Approved and Effective Safety Basis documents:

- KY/EM-174, Rev.0-A, *Safety Analysis Report for the Paducah Gaseous Diffusion Plant*, March 1997.
- KY/EM-175, Rev. 2, *Technical Safety Requirements for the Paducah Gaseous Diffusion Plant*, August 28, 2001.
- BJC/PAD-283 R1, *Paducah Gaseous Diffusion Plant Department of Energy Nonleased Facilities Plant Safety Operational Analysis*, November 28, 2001.
- DOE/OR/02-1561/V2, *Safety Evaluation Report for Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Volume II: Nonleased Facilities*, March 24, 1997
- *Safety Evaluation Report for the Authorization Basis Change Package for Characterization Activities Within Department of Energy Material Storage Areas and the C-410 Department of Energy Retained Area - USQD-RM-DMSADRA-5R2*, June 20, 2001.
- The Authorization Agreement for Phase 2 DMSAs, AA/R-00-035-PAD: DMSA reflects the SAR, TSR and a previous version of the SER specific to the DMSAs (Approved August 1, 2001).
- EM&EF 97-002 Positive USQD on Deleasing of DOE Material Storage Areas
- EM&EF 98-078 Positive USQD on Deleasing of DOE Material Storage Areas
- USQD-RM-DMSADRA-5R2 – Positive USQD on Characterization/Disposition of Fissile or Potentially Fissile Material within DOE Material Storage Areas and the C-410 DOE Retained Area

**Safety Basis Flowdown Assessment** – BJC issued a memorandum entitled *Safety Basis Flowdown Assessment for the Paducah Site* on February 6, 2002. This report contained two findings and six observations for the Category 2 nuclear facilities at Paducah.

- Finding #1 (*See and Flee policy not contained in general employee training*) is applicable to DMSAs even though it was based upon the cylinder yard fire scenario. BJC has developed a corrective action to revise the ETPP park Worker Training Module or issue a Paducah site-specific procedure/module to fully implement this requirement.
- Finding #2 (*A program that describes the required maintenance elements for Cylinder Handling Equipment is not in place*) does not apply to DMSAs.
- Observation #1 (*Authorization Agreements for DMSAs and C-746-Q have not been approved by DOE*) does not impact safety, since the Authorization Agreements (AAs) do not provide additional technical justification or safety related requirements. Although the AA for the C-746-Q

Nuclear Facility Safety Assessment – Nuclear Facility Interim Safety Basis  
Phase 2 DOE Material Storage Areas (DMSAs) within Fixed CAAS Coverage

facility is not approved, the AA for the DMSAs is approved.

- Observation #2 (*Lack of DOE approval has made maintaining the Safety Authorization Basis more complex*) is valid. However, the additional complexity has not resulted in a degradation of the safety within the DMSA operations. This supposition is supported by the conclusions of the multiple assessments listed and reviewed within this document.
- Observation #3 (*Inadequate review of procedures used to store DOE cylinders in USEC cylinder yards*) does not apply to DMSAs.
- Observation #4 (*Computer software used to select cylinders for inspection is not under configuration management*) does not apply to DMSAs.
- Observation #5 (*An administrative control used to control flammable materials in the cylinder yards has not been fully implemented through procedures*) does not apply to DMSAs.
- Observation #6 (*Some SB requirements are not flowed down into implementing procedures*) does not apply to DMSAs.

**DOE HQ AB Assessment** – The “*DOE Headquarters Independent Safety Basis Assessment of Bechtel Jacobs Company LLC and DOE Oak Ridge Operations Office*” was issued January 31, 2002. Appendix E (pp. E-19) contained Facility Safety Basis Document Reviews, including one for the Paducah DMSAs.

The DOE HQ AB Assessment report stated that the Hazard Category 2 designation for the Phase 2 DMSA was appropriate. However, the report indicated potential problems with the adequacy of the hazard analysis due to unresolved comments on the 1997 SAR and with the adequacy of controls due to unresolved comments on the 2001 SER for DMSAs. The DOE HQ AB Assessment report indicates that failure to resolve ORO AMESH review comments could affect the adequacy of the hazard analysis (pp. E-19). However, the report also indicates the DMSA controls are adequate to reduce risks (pp. E-20). Based on subsequent assessments by DOE HQ & ORO, as well as an independent consultant, the existing SER is adequate from a safety standpoint. The DOE HQ AB Assessment report specifically indicated the use of the Temporary CAAS (TCAAS) relying on the new proposed TSR for use of temporary CAAS should not occur until the related Nuclear Safety Division comments are resolved. However, the DOE HQ AB Assessment concludes that the restart of work activities in the Phase 2 DMSAs with fixed CAAS is acceptable.

The DOE HQ AB Assessment report summarizes the overall risk: “It seems like moderate risk due to the unknown/uncharacterized criticality hazard for the facility worker but low risk for the public and collocated workers. The USQD controls for Phase 1 and 2 characterization appear adequate to reduce risks as much as is reasonable until all the characterization is completed.” Furthermore, Appendix G (pp. G-2) indicates return to normal work is reasonable and delaying the characterization activities unnecessarily delays risk reduction.

**Safety Management Programs (SMPs)** – A review of the SMP and field activities/conditions was conducted on February 14, 2002. Three subject matter experts from Oak Ridge in the areas of Nuclear Criticality Safety, Fire Protection and Emergency Management participated with DOE Paducah Site Office staff in this review. A facility walkdown of Phase 2 DMSAs was performed. The team assessed characterization activities within a DMSA and inspected a variety of DMSAs throughout the site. Documentation of the SMP review included a matrix of questions and answers related to the DOE HQ AB Assessment, the BJC Safety Basis Flowdown Review Package and the team’s field observations. Additionally, interim measures and the results of the review were forwarded to BJC in a February 22, 2002, letter entitled “*Interim Measures Resulting From the DOE Review of Safety Basis Flowdown*”. The only interim measure identified in this letter, related to DMSAs, was a two-day advance notification to the DOE Paducah Site Office for entry into Phase 2 DMSAs for initial nuclear criticality safety characterization.

Observations made by the SMP review team were:

- More formality is needed in derivation of and implementation of NCSE posting requirements,
- Accumulations of combustibles in DMSAs needs to be evaluated by a Fire Protection Engineer,
- Better defined Emergency Action Levels for fire in the DMSAs need to be developed, and
- The Work Authorization with USEC to provide Emergency Management services needs to be agreed

**Nuclear Facility Safety Assessment – Nuclear Facility Interim Safety Basis**  
Phase 2 DOE Material Storage Areas (DMSAs) within Fixed CAAS Coverage

upon and signed.

These observations are being addressed through the Paducah Site Office (PSO) oversight program. The improvement needed in these areas is being documented in the Paducah Site Office Monthly Oversight and Inspection Report. The corrective actions associated with the deficiencies will be tracked within the BJC tracking system.

**Other Assessments** – Previous assessments of the adequacy for controls for characterization of the DMSAs include:

Prior to October 15, 2001:

- "Advanced Technologies and Laboratories (ATL) International, Inc. Independent Assessment of the Bechtel Jacobs Company, LLC Nuclear Criticality Safety program January 29, 2001 – February 22, 2001."
- "Evaluation of Paducah Building C-410 AB Change Package and SER, September 26, 2001."
- "2001 Assessment of the Bechtel Jacobs Company Fissile Material Operations, Westinghouse Safety Management Solutions and NISYS Corporation", March 30, 2001.
- ES&H Evaluation of DMSA C-409-01, Number PQA-SU-01-0568-PAD, July 3, 2001.
- "DOE Oak Ridge Operations Office Readiness Assessment for the Implementation of Temporary Criticality Accident Alarm and Evacuation Controls for the Paducah Site EM Program", October 2, 2001.

Prior to October 15, 2001:

- DOE HQ EM Safety/Operational Vulnerability Assessment (Bob Nelson) in January 2002.
- Routine Department of Energy Material Storage Area (DMSA) Inspections, Number PQA-SU-02-0553-PAD, February 2002.
- {DRAFT} BJC Management Assessment Report Based on the Joint DOE/BJC Safety Basis Technical Adequacy Review, February 21, 2002.
- DOE Paducah Site Office Monthly Oversight and Inspection Report.

### **Corrective Actions and Compensatory Actions**

DMSA characterization activities are deemed an essential operation primarily for Environmental Compliance and Risk Reduction (Nuclear Criticality Safety and industrial safety). Characterization activities are limited to Phase 1 and Phase 2 DMSAs that have permanent CAAS coverage. Additional safety documentation will be required prior to resuming characterization activities associated with Outside DMSAs without permanent CAAS coverage. Characterization activities are to be conducted in accordance with existing procedures and DMSA specific documentation (Activity Hazard Analyses, Sampling plans, Waste Management Plans, etc.) A two-day advance notification to the Paducah Site Office for initial entry into Phase 2 DMSAs for Nuclear Criticality Safety (NCS) characterization. The intent of the two-day notification is to allow the DOE staff the time necessary to provide oversight support.

### **Adequacy of Safety Basis**

Continued characterization, movement, storage, and disposition of materials in accordance with the approved NCSEs and SER for Phase 2 DMSA activities within fixed CAAS coverage has been adequately reviewed and should continue. No additional compensatory measures are required for continued safe operation and the compensatory measure for DOE notification prior to initial entry into Phase 2 DMSAs with fixed CAAS coverage allows for enhanced DOE oversight of these activities.

**Nuclear Facility Safety Assessment**  
**Portsmouth Critical Facilities**  
**Revised March 8, 2002**

**INTRODUCTION**

The following is a listing of the five Critical Category 2 facilities and why they are considered critical to Portsmouth operations:

X-7725 - This facility is a RCRA Part B permitted facility. Materials coming from 90-day storage areas are brought to this facility prior to the end of the 90-day period, in order to maintain compliance with RCRA regulations. Ongoing operations that need to be continued include waste sampling, repackaging, storage and preparation of hazardous waste for off site shipments. These ongoing operations are needed to meet Ohio EPA and US EPA regulatory commitments.

X-7745R - Materials in this storage yard are being repackaged or moved to inside storage due to concerns with waste container integrity. There have been employee concerns dealing with the waste breaching the storage containers at this storage pad. The BJC ES&H organization has evaluated the containers on this storage pad and has determined that all drums need to be removed from outside storage.

X-326 L Cage - This facility is a RCRA Part B permitted facility used for the storage of hazardous waste with greater than 20% assay uranium. It is also used to store classified waste. This is the only facility that can receive and store hazardous waste with greater than 20% assay uranium and/or classified waste.

X-744G - This facility is the interim storage facility for the Fernald and other uranium materials. The DOE Fernald Site has an Ohio EPA commitment to have this material offsite by June 2002. In order to meet this commitment, Fernald must have an outlet for this material.

X-326 DMSAs (DMSAs 1, 2, 3, 4, 5 and 12) - This facility is necessary to receive equipment with material greater than 20% assay generated as part of USEC plant operations. This is the only storage area on site that can receive this high assay material.

**1. FACILITY OVERVIEW**

- a. Facility No. **X-7725**                      Facility Name: **Recycle Assembly Building**  
Facility Category: **Category 2**

• **FACILITY DESCRIPTION**

The X-7725 is a multi-story diked facility for liquids, solids, and gas waste streams. All liquid waste streams stored in X-7725 are stored in diked areas. The building was modified in 1991 to meet RCRA storage standards.

The X-7725 Recycle and Assembly Building is located just north of X-3001 and adjacent to X-7726. The building was constructed in 1983 for the GCEP project and was originally intended for assembling new centrifuges and rebuilding and testing used ones.

- **ONGOING AND PLANNED OPERATIONS**

Ongoing operations include waste receiving, sampling, monitoring, repackaging, overpacking, storage and preparation for off-site shipment. There is blending of liquid wastes and some solid waste streams in X-7725.

- b. Facility No.: **X-7745R**                      Facility Name: **Recycle/Assembly Storage Yard**  
Facility Category: **Category 2**

- **FACILITY DESCRIPTION**

The X-7745R Recycle/Assembly Storage Yard is located north of X-3002 and east of X-7725. The storage yard occupies ~1.6 acres and was used to store new (unused) centrifuge casings between 1983 and 1985. The yard is currently used to store low level waste in miscellaneous container types. This area is covered by the X-7725 criticality accident alarm system (CAAS); however, the alarms are not audible to personnel in the area in accordance with regulatory requirements. Therefore, compensatory measures are maintained in the storage yard as described in the approved SAR.

- **ONGOING AND PLANNED OPERATIONS**

Ongoing operations include repackaging, overpacking, storage and preparation for off-site shipment.

- c. Facility No.: **X-326 DMSAs**  
Facility Name: **X-326 DOE Material Storage Areas (DMSAs)**  
Facility Category: **Category 2**

- **FACILITY DESCRIPTION**

DOE has agreed to accept areas inside USEC-leased buildings and outside areas that have been designated as DMSAs. These areas were established to store DOE and USEC material and equipment that is either contaminated or potentially contaminated with radioactivity, or contains uranium-bearing material [i.e. process equipment, low-level radioactive waste, hazardous (TSCA) waste contaminated with uranium, uranium tetrafluoride (UF<sub>4</sub>), etc.], which is physically located on property that was formerly leased by USEC. The DMSAs are within USEC-leased buildings, the floor area directly supporting the material extending to the DOE/USEC formerly leased storage area boundary are under the control of DOE. The boundaries are clearly marked through the use of ropes, dikes, signs, and/or painted lines. DOE has agreed to accept the following:

- equipment/material that was generated and clearly identified as a waste material [e.g., identified with a request for disposal (RFD) dated before the July 1993 lease agreement];
- waste that has been classified (by appropriate sample/analysis or evaluation) as a PCB waste (>50 ppm); and
- material that is an asbestos waste packaged in accordance with the DOE/USEC Waste Acceptance Criteria for Storage Facilities.

Two DMSAs within the X-326 process building have been designated as Enriched Uranium DMSAs. DOE agrees with USEC to hold in these areas uninstalled equipment and material that

contains >10% assay  $^{235}\text{U}$ , which would prevent USEC from meeting Nuclear Regulatory Commission (NRC) certification requirements.

DOE has full administrative control over DMSAs and no other materials shall be placed within these areas by USEC without DOE approval.

- **ONGOING AND PLANNED OPERATIONS**

This facility receives equipment with material greater than 20% assay generated as part of USEC plant operations. This is the only storage area on site that can receive this high assay containing equipment.

- d. Facility No. **X-744G**                      Facility Name: **Uranium Management Center**  
Facility Category: **Category 2**

- **FACILITY DESCRIPTION**

Sheetmetal warehouse for storage of excess uranium materials from Fernald, Hanford, Universities and other DOE sites. Renovated in 1999 for this new mission. Also, stores some uranium oxide materials from previous operations onsite. Some non-enriched materials are stored outside on the covered porch area.

X-744G is a steel-framed building with a concrete floor. The facility is divided into two sections: an eastern section of approximately 49,000 ft<sup>2</sup> (4550 m<sup>2</sup>) and a western section of approximately 37,000 ft<sup>2</sup> (3440 m<sup>2</sup>). Across the north side of the building is an open but covered area of 20,000 ft<sup>2</sup> (1860 m<sup>2</sup>) called the "north drum storage area." There is a 60-ft- (18-m-) high bay area inside the building.

- **ONGOING AND PLANNED OPERATIONS**

Receipt and storage of uranium material drums and boxes, i.e., uranium metal, uranium oxides, UF<sub>4</sub>, UO<sub>2</sub>F<sub>6</sub>, etc. Uranium metals include slugs, billets, derbies, cores, and ingots and fuel rods. A glove box for sampling exists in the building. There are currently no plans to use the glovebox.

- e. Facility No. **X-326 L Cage**                      Facility Name: **RCRA Storage Area**  
Facility Category: **Category 2**

- **FACILITY DESCRIPTION**

Area within the leased X-326 Process Building that is used for storage of RCRA/HEU waste materials. The X-326L Cage is a storage unit on the first floor of X-326 on the south end of the building. The area is used to store such hazardous waste as high-assay uranium-bearing materials, asphyxiants, mixed wastes, technetium-bearing material, asbestos, and polychlorinated biphenyls (PCBs).

- **ONGOING AND PLANNED OPERATIONS**

Ongoing operations include waste receiving, sampling, monitoring, repackaging, overpacking, storage and preparation for off-site shipment. There is blending of liquid wastes and some solid waste streams in X-326L. Liquid blending is currently deferred until corrective actions are completed (see section 3, Issue 2a).

## 2. SUMMARY OF ASSESSMENTS AND REVIEWS

- SAFETY BASIS LIST/STATUS
  - See Attachment 1, List of Safety Basis documents for Portsmouth critical Category 2 facilities
  
- SAFETY BASIS FLOWDOWN ASSESSMENT
  - In December 2001, a BJC Oak Ridge team conducted a management assessment of the Portsmouth safety basis flow down and implementation for Category 2 nuclear facilities. The report states that the facility categorization was correct and documentation exists to support the facility categorization. The final report was issued on January 28, 2002 by BJC (SBFDRP). As a result of BJC's self-assessment, corrective actions were developed. These findings and associated corrective actions are being tracked by BJC.
  
  - The DOE ORO/Site Team who visited the project the week of February 11, 2002, developed issues concerning the status of the project safety basis. While the team did not judge any issue to be of a "shut down" significance, these issues represent concerns regarding BJC operations, facilities, and the state and applicability of our safety basis documentation. Compensatory measures and/or corrective actions were developed. The issues and associated compensatory measures/corrective actions are listed in paragraph 3 of this report. An assessment of the Criticality Safety, Fire Protection and Emergency Management Programs for the reviewed facilities was also performed. The specific results are listed in the Safety Management Programs section of this report.
  
- INDEPENDENT SAFETY BASIS ASSESSMENT OF BECHTEL JACOBS COMPANY, LLC AND DOE OAK RIDGE OPERATIONS OFFICE, JANUARY 31, 2002
  - Summary of specific findings/observations
    1. Adequacy of Hazard Categorization – Report states "possibility" of categorization changes due to "future discoveries" of holdup for facilities designated as radiological.
    2. Failure to resolve SAR AB comments cited.
    3. Report cited Paducah DMSA "potential" concerns on criticality and fires, nothing specific to PORTS.

The overall evaluation stated "low risk" of criticality and "low risk" for public and collocated workers.

Note: The HQ A/B assessment team did not visit PORTS.

- SAFETY MANAGEMENT PROGRAMS (SMPs)
  - In February 2002, a DOE/ORO team reviewed the Portsmouth Nuclear Criticality Safety Program for the five critical facilities. The team stated that the program has deficiencies and the NCSA procedures are unacceptable; however, for the types of material being received, the controls in the field appear to be safe for continued operations, and there are no imminent problems. The DOE/ORO team identified compensatory measures which are listed in Section 3 (See Issues 1 and 2).

- The February 2002 DOE/ORO team recommended either an interim compensatory measure that a verification program be instituted at the X-744G for shipper/receiver validation or reconfirm with NMCA that current practice was acceptable. Correspondence (e.g. electronic mail dated March 9, 2001 and DOE Memorandum dated February 19, 2002) from the DOE/ORO NMC&A has authorized acceptance without verification sampling.
- The February 2002 DOE/ORO team recommended as an interim compensatory measure that Fire Protection Services approve all increases in combustible loading until the BJC corporate Fire Protection program is implemented. On August 13, 1999 USEC Fire Protection Services issued instructions for storage of wooden shipping containers in X-744G. The facility is in compliance with these storage directions. On February 15, 2002, USEC Fire Protection Services performed an inspection of the critical Category 2 facilities, and found no major concerns with the use of combustible packaging (DOT shipping containers); therefore, the current storage arrays are acceptable.
- The February 2002 DOE/ORO team reviewed the Portsmouth Emergency Management Program. The team identified that there was a lack of up-to-date facility hazard information for the Emergency Response Organization (ERO). No compensatory measures were recommended since the Emergency Classification procedures direct the classifier to generically consider chemical and radiological hazards for facilities and the ERO personnel are trained and qualified per an NRC program which insure they are knowledgeable of general site hazards. Additionally, such information is found in facility specific information packets which are available to the ERO. However, there is a potential weakness in maintaining the packets current. Specific corrective actions are listed in Section 3 (Issue 5).
- OTHER ASSESSMENTS
  - In December 2001, the DOE/ORO Office of Nuclear Fuel Security and Uranium Technology performed a review of the authorization basis documents and requirements for X-744G. The DOE/ORO review concluded that the existing DOE approved authorization basis for X-744G is in accordance with the requirements of DOE Order 5480.23 and DOE Standard 1027, Change No. 1.
  - In January 2001, BJC commissioned an independent review and assessment of the NCS program by Advance Technologies and Laboratories International, Inc. This assessment concluded that BJC has the basic framework in place for an effective NCS program.
  - In March 2001, Westinghouse Safety Management Solutions, Inc. and their subcontractor, NISYS, performed an independent assessment of the Portsmouth fissile material operations. The assessment determined that there were controls in place to safely continue operations while the NCSEs were being upgraded.

### 3. CORRECTIVE ACTIONS AND COMPENSATORY MEASURES

The February 12-13<sup>th</sup> assessment identified the following issues and their compensatory measure(s) and/or corrective action (s) are summarized below :

1. Issue: NCSA X-7745R003 for B-25 boxes contained an incorrect assumption.

Compensatory Measure: A senior, qualified NCS Engineer shall concur, in writing, on the movement of fissile material.

Corrective Action: Revise the NCSA/E.

2. Issue: There has not been a complete validation of contractor corrective actions previously identified in other documents with respect to the NCS program.

Compensatory Measure: A senior, qualified NCS Engineer shall concur, in writing, on the movement of fissile material.

Corrective Actions.

- a. Identify NCS actions reported as closed by the contractor.
- b. Perform validation of NCS actions reported closed.

- 2a. Issue: Fissile liquid blending operations in X-326L cage were not reviewed by the DOE/ORO Team.

Compensatory Measure: Defer liquid blending operations in X-326L cage.

Corrective Actions:

- c. Submit NCSAs/procedures associated with L cage operations to ORO.
- d. ORO review and provide approval/direction for L cage operations.

3. Issue: Accepting offsite material into X-744G without verification sampling.

Compensatory Measures: None

Corrective Action: Request NMC&A ORO concurrence to this practice. Completed and received, see bullet 7 under Continued Operations Assessment.

4. Issue: The amount of combustible packaging in X-744G.

Compensatory Measures: Evaluate future scheduled shipments for combustible load acceptability until such time as corrective action 4b (below) is completed.

Corrective Actions

- a. Have the Portsmouth Fire Protection organization evaluate the current combustible loading. Completed and conditions acceptable.
- b. Develop and implement the procedure to flowdown BJC corporate policy.
- c. Have future Preliminary Hazard Screenings (PHS) be reviewed by the FP Engineer.

5. Issue: Lack of up-to-date facility hazard information for the Emergency Response Organization.

Compensatory Measure: None required, procedures call out awareness to generic site hazards.

Corrective Actions

- a. Revise Emergency Management Hazard Assessments (EMHAs).
- b. Revise Fire Hazard Analyses (FHAs).
- c. Evaluate periodicity requirements for updating facility information available to the Plant Shift Superintendent.

**4. ADEQUACY OF SAFETY BASIS**

The review team concludes that the current operations at Portsmouth are safe to continue with the existing safety bases and compensatory measures listed above. Although the approved SAR is outdated, the Safety Basis is being maintained through the USQD process.

# Nuclear Facility Safety Assessment

## Portsmouth Critical Category 2 Facilities and Associated Safety Basis Documents

Facility	Document No.	Document Title	Approval Date	Category		
<b>Active Safety Basis Documents</b>						
X-7725, X-7745R, X-326 L-Cage, X-326 DMSAs, X-744G	POEF-LMES-89, Rev. 0-A	Safety Analysis Report for the Portsmouth Gaseous Diffusion Plant	2/13/97	2		
	BJC/PORTS-7 R1	Technical Safety Requirements for the Portsmouth Gaseous Diffusion Plant	7/26/99			
	K/GDP/SAR-111 Rev. 1	Portsmouth Gaseous Diffusion Plant, Department of Energy Nonleased Facilities, Plant Operational Analysis, Lockheed Martin Energy Systems, Inc.,	January-97			
	POEF-530-95-1029	Unreviewed Safety Question Determination Analysis of 500 Foot versus 200 Foot Radius for Immediate Evacuation Zone for Criticality Accident Alarm System at Portsmouth Gaseous Diffusion Plant	6/19/95			
	RG-70-7002/97-0018	Portsmouth Gaseous Diffusion Plant Immediate Evacuation Zone and Slaved Buildings for Criticality Accident Alarm System,	2/20/97			
	POEF/USQD-0027	Evaluation of Insufficient Criticality Accident Alarm System Annunciation in X-7745R Storage Pad	10/29/97			
	<b>DOE APPROVAL LINE</b>					
	DOE/OR/02-1560/V2	Safety Evaluation Report for Portsmouth Gaseous Diffusion Plant, Volume II Nonleased Facility Only	3/24/97			
TSR approval letter	USG Memorandum UE-53:DeVault of July 26, 1999	7/26/99				

Attachment 1

# Nuclear Facility Safety Assessment

## Portsmouth Critical Category 2 Facilities and Associated Safety Basis Documents

PORTS NUCLEAR USQDs				
Facility	USQD Number	Title	Date Approved	Positive or Negative USQ
X-7725	POEF-USQD-019	Buildings X-744G and X-7725 Evaluation of As-Found Conditions Involving Seismic Issues and NCS Storage	5/7/97	Negative
	POEF-USQD-027	Evaluation of Insufficient Criticality Accident Alarm System Annunciation in X-7745R Storage Pad	10/29/97	Positive "As-Found" USQ
	BJC/USQD-SM-01-0003	Demobilization of X-701B Lance Permeation Demonstration Project and Relocation of Chemicals and Equipment from Project Area East of X-701B to Storage in the X-3346 Feed & Withdrawal Facility	12/22/00	Negative
	WASTREN/USQD-SM-01-0010	X-705 Heavy Metals Sludge Treatment and Disposal	3/28/01	Negative
	BJC/USQD-SM-01-0013, Rev. 1	P-101, Soft Combustible Debris Project and P-450 Floor Sweepings Disposal Project	7/9/01	Negative
	WASTREN/USQD-SM-02-0001	P-101 Soft Combustible Debris Disposal Project, SNC 51, Rev. 1	12/4/01	Negative
	WASTREN/USQD-SM-02-0002	SCN-27 (Revision 1) X-7745R LLW Burnables	2/14/02	Negative
X-7745R	POEF/USQD-0022	Evaluation of Lack of Criticality Accident Alarm System Annunciation at X-7745R	8/6/97	Negative
	POEF/USQD-0025	Evaluation of Changes of Lease Agreement	9/24/97	Negative
	POEF/USQD-0027	Evaluation of Insufficient Criticality Accident Alarm System Annunciation in X-7745R Storage Pad	10/29/97	Positive "As-Found" USQ
	BJC/USQD-007	Incorrect CAAS Evacuation Zone for X-7745R	8/28/98	Positive "As-Found" USQ
	BJC/USQD-SM-01-0013, Rev. 1	P-101, Soft Combustible Debris Project and P-450	7/9/01	Negative
	WASTREN/USQD-SM-02-0002	SCN-27 (Revision 1) X-7745R LLW Burnables Disposal Project	2/14/02	Negative
X-326 DMSAs	BJC/USQD-001	As-Found Condition in X-326 in DMSA 12	5/15/98	Negative
	BJC/USQD-004	PCBs in X-326 DMSA12	7/23/98	Negative
	BJC/USQD-033	Removal and Revision of DMSAs in Buildings X-326 and X-333 at PORTS	2/15/00	Negative
	BJC/USQD-SM-01-0013, Rev. 1	P-101, Soft Combustible Debris Project and P-450 Floor Sweepings Disposal Project	7/9/01	Negative
	Wastren/USQD-SM-02-0001	P-101 Soft Combustible Debris Project SCN-51, Rev. 1	12/4/01	Negative

# Nuclear Facility Safety Assessment

## Portsmouth Critical Category 2 Facilities and Associated Safety Basis Documents

PORTS NUCLEAR USQDS				
Facility	USQD Number	Title	Date Approved	Positive or Negative USQ
X-326 L-CAGE	POEF-USQD-005	X-326 'L' Cage Installation of NCS Storage Racks	11/16/95	Negative
	POEF-USQD-023	Repacking Tower Ash and Conversion Ash in X-326 L-Cage Glove Box	8/6/97	Negative
	POEF-USQD-029	Repackaging HEU Trap Materials in X-326 L-Cage Glovebox	11/20/97	Negative
X-744G	POEF-USQD-019	Buildings X-744G and X-7725 Evaluation of As-Found Conditions Involving Seismic Issues and NCS Storage Racks or Shelves	5/7/97	Negative
	POEF-USQD-030	Storage of UF6 Sample Tubes (hoke Tubes) in X-744G	12/5/97	Negative
	BJC/USQD-0029	Long Term Storage of University of Nebraska Normal Uranium Materials at Portsmouth	9/17/99	Negative
	BJC/USQD-0027	Reduction in CAAS Coverage in X-744G Facility	9/29/99	Negative
	BJC/USQD-037	Long Term Storage of University of Florida LEU Materials at Portsmouth	3/22/00	Negative
	BJC/USQD-0025 Rev. 1	Long Term Storage of Enriched Uranium Oxides, Fluorides and Metals at Portsmouth	7/17/00	Negative
	BJC/USQD-SM-01-0012	Long Term Storage of University of PNNL Uranium Oxides in X-744G	4/20/01	Negative
	BJC/USQD-0022 Rev. 1	Long Term Storage of Fernald Uranium Materials at PORTS	9/15/99 R1	Negative
	BJC/USQD-0022 Rev. 0	Long Term Storage of Fernald Uranium Materials at	4/29/99 R0	Negative
	BJC/USQD-SM-02-0003	Use of Portable Industrial Electric Blower Heaters in X-744G Material Storage Areas	12/28/01	Negative

## Nuclear Facility Safety Assessment

### Portsmouth Critical Category 2 Facilities and Associated Safety Basis Documents

PORTS NUCLEAR USQDs				
Facility	USQD Number	Title	Date Approved	Positive or Negative USQ
PORTS sitewide	POEF-USQD-036	NCS Program Procedure Upgrade	3/4/98	Negative
	POEF-USQD-037	Evaluation of changes in the 1998 Update of the Safety Analysis Report for the Nonleased Facilities at PORTS	3/11/98	Negative
	POEF-USQD-039	Environmental Management - Management & Intergration Contract Bechtel Jacobs Company and Organization	3/31/98	Negative
	BJC/USQD-005	As Found Condition-Error in Calculation for DC-1 Loading Procedure	8/20/98	Negative
	BJC/USQD-006	Technical Error in NCSA-PLANT048	8/12/98	Positive "As-Found"
	BJC/USQD-011	Positive USQD Technical Error in NCSA-PLANT062	10/16/98	Positive "As-Found" USQ
	BJC/USQD-012	Use of PQ-A-1100 and Associated SAR Changes	1/6/98	Negative
	BJC/USQD-0015	Consolidation of Emergency Operations Centers	11/13/98	Negative
	BJC/USQD-0018	Small Diameter Container Storage Array Aisle Spacing	12/11/98	Negative
	BJC/USQD-0021	Modifications to PORTS NCS Program to incorporate Work Smart Standards	4/30/99	Negative
	BJC/USQD-0023	Modifications to PORTS Radiation Protection Program to incorporate Work Smart Standards	5/5/99	Negative
	BJC/USQD-0024	Modifications to PORTS Quality Assurance Program to incorporate Work Smart Standards	4/30/99	Negative
	BJC/USQD-034	Changes in PORTS Radiation Protection Program Procedures SH-B-4011, SH-B-4012, SH-B-4014, and SH-B-4030	2/15/00	Negative
	BJC/USQD-035	Waste Management & Site Services Contracts	1/21/00	Negative
	BJC/USQD-036	"As Found" Condition - Exceedance of NCSA Mass Limits	3/9/00	Negative
BJC/USQD-SM-01-0005	31 Safety and Ecology Portsmouth Specific Procedures Pertaining to Health Physics Instrumentation Calibration	1/11/01	Negative	