



02-0000750

Department of Energy

Washington, DC 20585

March 15, 2002

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02 MAR 18 AM 9:37
DNF SAFETY BOARD

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, DC 20004

Dear Mr. Chairman:

Enclosed are two reports referenced in Under Secretary Card's March 4, 2002, letter to the Board concerning nuclear safety management issues at the Department of Energy Oak Ridge Operations Office. Each report represents elements of the Department's efforts to assess problem areas and to institute corrective measures.

The first report is an adequacy assessment of the Oak Ridge contract with the Bechtel Jacobs Company (BJC). As you know, BJC performs environmental clean up and waste management within the Oak Ridge complex, including Paducah and Portsmouth. A team of qualified individuals, lead by Mr. Michael Weis of the Department's Office of Environmental Management, performed this review during February 2002. The report is enclosed. Overall the report concluded, "...the contract is an adequate mechanism to ensure work scope is identified and expectations for completing work in compliance with the core functions and principles of Integrated Safety Management are communicated, however, improvements in contract execution are warranted."

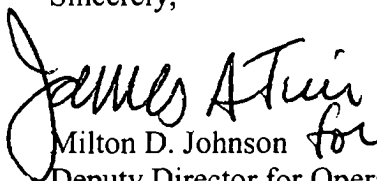
The second report addresses the Oak Ridge Determination for Continued Operations for Environmental Management Facilities, in which the Oak Ridge Manager concludes the operations for the reviewed facilities, "...can be safely conducted, contingent on implementation of the identified compensatory measures and completion of specified corrective actions." Enclosed are the checklists used to guide the assessments and the individual facility assessment reports.



Our next transmittal to the Board on this matter will be the overall corrective plan, which is due to you on April 19, 2002. We intend to brief the Board when the plan is complete.

If you have any questions regarding this matter, please contact me on 202-586-5440.

Sincerely,

A handwritten signature in black ink that reads "James A. Tuin". The signature is written in a cursive style with a large initial "J".

Milton D. Johnson *for*
Deputy Director for Operations
Office of Science

Enclosures

cc: R. Card, S-3 (w/o attach)
J. Roberson, EM-1 (w/o attach)
L. Dever, OR (w/o attach)
M. Whitaker, DNFSB/
DOE Representative (w/o attach)

SEPARATION

PAGE

DOE F 1325.8
(2-88)
SFC (07-30)

United States Government

Department of Energy

memorandum

DATE: MAR 5 2002
REPLY TO:
ATTN OF: EM-40

SUBJECT: Environmental Management Team Review of Bechtel Jacobs Contract at Oak Ridge

TO: Jim Decker, Acting Principal Deputy Director
Office of Science

The Environmental Management Team has completed the review of the Bechtel Jacobs contract at Oak Ridge. The results (attached) indicate that the contract is an adequate mechanism to ensure work scope is identified and expectations for completing work in compliance with the core functions and principles of Integrated Safety Management are communicated, however, improvements in contract execution are warranted. Activities in four major action areas are necessary to address the review teams findings:

- 1) Complete all actions to crosswalk the work smart standards set to the orders of interest to the Defense Nuclear Facilities Safety Board, and make necessary contract modifications to incorporate missing requirements. (Office of Science)
- 2) Perform a verification of the site processes utilized to complete the work smart standards set crosswalk. (Environmental Management)
- 3) Modify the contract to immediately change the contract to allow all personnel to suspend work in imminent hazard conditions (with particular recognition of the role of the facility representative) and develop a contract management plan that addresses the weaknesses in contract execution. (Oak Ridge Operations Office directed by Office of Science)
- 4) Convene a team to evaluate and recommend a decision on the appropriate contract mechanism for this scope of work in the future. (Environmental Management)

Questions related to the review should be directed to Michael Weis of my staff at 301-903-7102 or if you prefer a briefing will be provided.



Jessie Hill Roberson
Assistant Secretary for
Environmental Management

Attachments

cc:

M. Weis, EM-40
J. Fiore, EM-30
P. Golan, EM-3
S. Johnson, EM-5
R. Butler, EM-4
J. Roberts, SC-1
L. Dever, DOE-OR

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REVIEW TEAM

Michael J. Weis	Associate Deputy Assistant Secretary for Project Completion, DOE HQ
Howard B. Gnann	Deputy Assistant Manager for Material and Facility Stabilization, Savannah River, SC
Walter B. Scott	Senior Technical Advisor, Office of River Protection , WA
Matthew S. McCormick	Richland Operations Office, WA
John J. Mocknick	Program Manager, River Protection Office, DOE

CONTRACT AREA FOCUS

Incentives and Work Definition	Michael Weis
Operations, Research	John Mocknick
Work Authorization and Incentives and Contract Modification Analysis	Howard Gnann
Hazard Requirements for Contract Control	Walter Scott
DOE Policy and Directives	Matthew McCormick

SUMMARY STATEMENTS

- The Contract serves as an appropriate mechanism for DOE to establish clear expectations for contractor's cost, scope, schedule, performance, and also that all activities are to be performed in compliance with ISM (See Attachment III)
- The Contract allows the Department to unilaterally make any changes necessary to adjust expectations
- The Contract should be strengthened in DOE 's authority to suspend work and description of core competencies of contractor
- The Operations Office appears to be addressing previously identified Work Smart Standards and Safety Basis Documentation issues through comprehensive reviews.
- Contract execution lacks rigor and formality and is a significant weakness within the Operations Office

RECOMMENDATIONS FOR FOLLOW-UP

Action Area #1

- A) The Office of Science should develop specific commitments and dates for reconstituting the Work Smart Standards Set and completing evaluation of appropriate safety basis documentation for each activity
- B) The Office of Science should review and revise Authorization Agreements to ensure that documents included in the Authorization Basis are consistent and clearly identified

Action Area #2

- A) The Environment Management Team will, upon the Office of Science completing Action Area #1, perform a verification of the site processes utilized to complete the work smart standards set crosswalk

Action Area #3

Immediate

- A) The Office of Science should direct Oak Ridge Operations to immediately modify the contract to impart authority for anyone to suspend work in dangerous situations, particularly emphasizing the unique role of facility representatives
- B) The Office of Science should direct Oak Ridge Operations to develop and implement a DOE Oversight Plan until the contractor Work Smart Standards and Safety Basis issues are resolved.

Longer Term

- A) The Office of Science should direct Oak Ridge Operations Office (ORO) to develop a Contract Management Plan and Configuration Control Process to:
 - 1) better define what constitutes a contract cost, schedule & scope change
 - 2) develop a contract deliverable list with DOE and Contractor responsible organizations and staff and processes to ensure contract requirements are being met
 - 3) develop a timetable for acceptance/rejection of deliverables
 - 4) clearly define HCA, CO, and COR responsibilities
 - 5) integrate performance incentive development activities across the organization
 - 6) develop processes that ensure that standard changes and safety bases requirements are linked to baseline and funding changes
- C) The Office of Science should direct ORO to develop a contractual mechanism to document completion of WSS revisions and establish contractual agreement of requirements
- C) The Office of Science should direct ORO include a review of contract implementation in future ISM verifications
- D) The Office of Science should ensure that recommendations given by review teams such as DNFSB, HQ, Internal Review Teams, etc. are validated through the proper technical analysis and justification before they are incorporated as a contract modification

Action Area #4

- A) The Assistant Manger for Environmental Management shall convene a team to evaluate and recommend a decision on the appropriate contract mechanism for this scope of work in the future.

ORO PERSONNEL INTERVIEWED BY TEAM

Program Manager	POC	Contact #	Interview Date
Leah Dever	ORO Manager/HCA	865-576-4444	02/14/02
Robert Folker	Deputy ORO Manager for Business Affairs	865-241-8077	02/14/02
Lori Fritz	Deputy Assistant Manager for EM/COR	865-576-0742	02/14/02
Bob Sleeman	Group Leader, Environmental Services Group	865-576-0715	02/13/02
Marlena Clark	DOE Contracting Officer	865-576-0759	02/14/02
Melyssa Noe	Work Smart Systems/Change Control	865-241-3315	02/13/02
Carl Everatt	Authorization Basis Expert - On Detail From SRS	888-361-2701	02/12/02
Jay Mullis	Facility Representative – Authorization Safety Basis	865-241-3706	02/13/03
Wayne Albaugh	Team Leader, Directive Management Group	865-576-0974	02/13/02
Karen Houser	Group Leader, Program Integration Team - WBS/ Performance Agreements	865-576-8957	02/13/02
Rick Ferguson	BJC – Planning and Controls	865-241-1148	02/14/02

DOCUMENTS REVIEWED BY TEAM

Numerous documents for team review were collated into 11 Reference Books. In addition several miscellaneous documents were requested and also evaluated.

BOOK 1

Bechtel Jacobs Company LLC Summary or List of orders in Work Smart Standards:

- Letter from R.C. Sleeman to P.F. Clay, dated January 28, 2002, *Analysis of Orders of Interest to the Defense Nuclear Facilities Safety Board*
- Environmental Management and Enrichment Facilities Operations Work Smart Standards
- Engineering Design and Construction Work Smart Standards for Environmental Safety, and Health
- UF₆ Cylinder Program Work Smart Standards
- Appendix E Baseline List of Required Compliance Documents
- DOE Order of Interest to DNFSB That Are Not Currently in Bechtel Jacobs Contract
- Letter from John T. Conway to Robert Gordon Card, dated October 15, 2001, regarding the Department of Energy's Oak Ridge Operations Office review of the implementation of Bechtel Jacobs Company's Integrated Safety Management System

BOOK 2

Complete Set of Work Smart Standards and SRIDS in Bechtel Jacobs Company LLC Prime Contract:

- Letter from R.C. Sleeman to P.F. Clay, dated January 28, 2002, *Analysis of Orders of Interest to the Defense Nuclear Facilities Safety Board*
- Contract Requirement Change Notice #13
- Environmental Management and Enrichment Facilities Operations Work Smart Standards
- Engineering Design and Construction Work Smart Standards for Environmental Safety, and Health
- UF₆ Cylinder Program Work Smart Standards
- Emergency Management Standards/Requirements Identification Document
- Occurrence Reporting Standards/Requirements Identification Document
- Crosswalk of Directives of Interest to the DNFSB

BOOK 3

Bechtel Jacobs Company LLC Exhibit G – Proforma, Exhibit E – Technical Specifications and Exhibit E – Technical Specifications for Safety Authorization Basis Documents:

- Exhibit G – Subcontract Proforma – Environmental, Safety & Health Requirements Flowdown as a part of Subcontracts
- Exhibit E – Technical Specifications
- Exhibit E – Technical Specification for Safety Authorization Basis Document

BOOK 4

Bechtel Jacobs Company LLC ES&H Expectations

- Environmental Safety and Health Expectations for Fiscal Year 2002
- Environmental Safety and Health Metrics for Fiscal Year 2002

BOOK 5

Bechtel Jacobs Company LLC Management Description and Organization Chart

BOOK 6

DOE Management and Integrating Fixed Price Subcontracting Lessons Learned Study – Final Report

BOOK 7

Integrated Safety Management System Supplement

BOOK 8

Integrated Safety Management System Description

BOOK 9

Bechtel Jacobs Company LLC Quality Assurance Program Plan for Environmental Management and Enrichment Facilities at Oak Ridge, Tennessee, Portsmouth, Ohio, and Paducah, Kentucky

BOOK 10

U.S. Department of Energy, Oak Ridge Operations, Environmental Management, Management & Integration Contract, DE-AC05-98OR22700, Bechtel Jacobs Company, December 18, 1997

BOOK 11 (miscellaneous)

- Life Cycle Baseline Plan for FY 2002 (WBS)
- Performance Agreements for FY 2002 (PBI's)
- FY 2002 Work Authorization Letter to Mr. Paul Clay, BJC from Bob Sleeman, COR, ORO
- Memorandum designating Lori Fritz as COR for BJC Contract
- Memorandum designating Robert Seeman as COR for BJC Contract
- ORO O 250, Standards Management – Chapters 1 thru 8
- ORO Change Control Board Charter, EM-2.1 – Rev. 2
- ORO O 420 Chapter XI – Order on Development, Approval and Maintenance of Authorization Agreements
- ORO M 411.1-1D – Manual of Safety Management Functions, Responsibilities, and Authorities, Level II, for Oak Ridge Operations, October 31, 2000
- DOE Order O 541.1A – Appointment of CO's and COR's
- DAE Chung Report, February 1, 2002
- Bechtel Jacobs Company Diversity Plan
- Bechtel Jacobs Company Comprehensive Management Plan, June 1998
- Bechtel Jacobs Company Phase-In Report, June 1998 (Transition Plan)

SEPARATION

PAGE

United States Government

Department of Energy

Oak Ridge Operations Office

memorandum

Date: March 15, 2002

Reply to
ATTN OF: M-1:DeverSUBJECT: **DETERMINATION FOR CONTINUED OPERATIONS OF ENVIRONMENTAL
MANAGEMENT FACILITIES OPERATIONS**

TO: James F. Decker, Acting Director, Office of Science, SC-1

Please reference Bechtel Jacobs Company LLC's (BJC) letter to the Acting Assistant Manager for Environmental Management (AMEM) Oak Ridge Operations, dated March 4, 2002, "Actions to Determine Safety of Ongoing Environmental Management Operations" (Attachment 1). A number of assessments have been performed by DOE Oak Ridge Operations Office (ORO) and BJC to determine if the current safety basis for continued operations is adequate, pending completion of upgrades to the safety basis documents to meet the requirements promulgated in 10 CFR 830 Subpart B. Based on the completion of several key assessments and reviews, BJC has determined that the safety bases for Category 2 and Category 3 nuclear defense facilities are adequate to ensure safety of selected operations, contingent on the immediate implementation of identified compensatory measures and completion of key corrective actions in response to recent DOE and BJC reviews.

An independent review by DOE ORO of key operations was conducted to ensure that the BJC assessments were comprehensive and accurately reflected ongoing process operations. In an effort to prioritize oversight activities, DOE program managers reviewed a listing of ongoing operations performed in Category 2 and Category 3 nuclear facilities and identified those operations that were deemed to be critical based on the operation's contribution to safety of the workers, environment, or public; continued compliance with existing regulatory permits; or support to critical missions of the Office of Science and the National Nuclear Security Administration. Based on this initial review, four facilities located at the Oak Ridge Reservation (Tower Shielding Reactor Facility, Liquid Low-Level Waste System, Molten Salt Reactor Experiment Facility, and several Low-Level Waste Storage Facilities), five facilities at Portsmouth, Ohio (X-7725, X-7754R, X-326L cage, X-744G, and X326 DOE Material Storage Areas), and DOE Material Storage Areas located at Paducah, Kentucky, were selected for additional reviews by DOE ORO staff.

Reviews of the selected facilities were led by cognizant Office of the AMEM line managers (including program managers and facility representatives) and supported by subject-matter experts in criticality safety, emergency management, and fire protection from the Office of the Assistant Manager for Environment, Safety, Health, and Emergency Management.

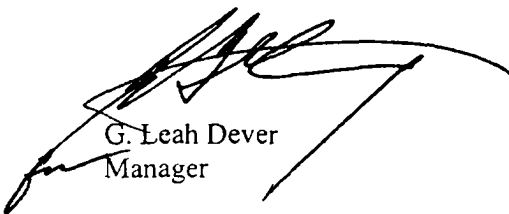
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(AMESH). Checklists were developed and utilized to guide the assessments and are included as Attachment 2. In addition, each team prepared a nuclear facility assessment report, which included a review of recently completed facility assessments conducted by BJC, results from the independent DOE Headquarters review (Dae Chung report), and other recent assessments/reviews prior to performing field verifications of facility conditions. These reports are included as Attachment 3. Results of these reviews were presented to senior DOE ORO managers (Deputy for Operations, AMESH, and Acting AMEM). In general, the reviews indicated that the 10 operations reviewed are adequately bound by their existing safety bases and should continue contingent on implementation of identified compensatory measures.

In addition to the independent reviews conducted by DOE ORO, a joint BJC/DOE team consisting of personnel with safety basis experience reviewed the safety basis documentation for selected facilities. This review evaluated the completeness and correctness of the dominant accident scenarios, key assumptions, and explicit/implicit control sets. The review resulted in several recommended compensatory measures and long-term corrective actions. BJC senior management directed the BJC project managers to implement the compensatory measures by March 6, 2002, via BJC interoffice memorandum, "Safety Basis Technical Adequacy Assessment Required Actions," dated March 1, 2002. The compensatory measures are to remain in effect until such time as the issues that precipitated the measures are resolved.

Based on these reviews, DOE ORO is in agreement with the determination that the operations for the 10 facilities independently reviewed can be safely conducted, contingent on implementation of the identified compensatory measures and completion of specified corrective actions.

If you have any questions, please call me at (865) 576-4444.



G. Leah Dever
Manager

Attachments (3)

cc w/attachments:

M. Holland, Brookhaven Area Office
J. Roberson, DOE-HQ, EM-1
M. Whitaker, DOE-HQ, EH-9
M. Morrow, DOE-ORO, M-2
L. Fritz, DOE-ORO, EM-90

Attachment 1

**Letter from Paul Clay to Lori Fritz
Dated March 4, 2002,
"Actions to Determine Safety of Ongoing
Environmental Management Operations"**

DNF SHIPMENT BOARD

02 MAR 18 AM 9:37

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U. S. Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831

Attention: Lori Fritz, Contracting Officer's Representative

Subject: Actions to Determine Safety of Ongoing Bechtel Jacobs Company LLC Environmental Management Operations

This letter summarizes the actions implemented by Bechtel Jacobs Company LLC (BJC) to assess, confirm, and establish the basis for continued safe operations of the Category 2 and 3 nuclear facilities managed by BJC for the Department of Energy Oak Ridge Operations (DOE ORO) EM program. The Defense Nuclear Facilities Safety Board (DNFSB), in its October 15, 2001, letter to DOE, recommended several actions. BJC has focused efforts on what we consider the highest priority recommendation: "[DOE] should [make] a determination of the safety of ongoing operations" BJC has completed a series of actions to assure that EM operations and activities in nuclear facilities can continue to be performed safely.

Summarized below are the actions taken by BJC to assess and confirm the basis for continued safe operations of our Category 2 and 3 nuclear facilities managed consistent with the Safety Basis list approved by DOE. For each assessment, we have summarized (1) the scope of the assessment; (2) the overall assessment conclusion; (3) the implementation of any necessary compensatory measures; and, (4) near-term actions. A discussion of other related and long-term actions is also provided. Collectively, we believe that these assessments, compensatory measures, and actions ensure the safety of continued work activities.

Safety Basis Flow Down (SBFD) Assessments for Category 2 and 3 Facilities – In early February 2002, BJC completed comprehensive assessments of our Safety Basis documents and the flow down requirements from these documents to facility operations. The SBFD Assessments involved all BJC category 2 and 3 nuclear facilities, with 28 separate assessment reports issued. The following areas were reviewed: facility hazard classification; flow down of safety requirements to procedures; field implementation of safety basis related requirements; knowledge, training, and qualifications of facility management responsible for maintaining operations in accordance with safety basis controls; and flow down of requirements to subcontractors. A copy of the SBFD Assessment summary report is provided as Attachment 1. It furnishes more detail on the methods and results of the assessment. Copies of the 28 detailed facility reports are on file in the BJC Document Management Center.

- **Conclusion** – The SBFD assessments concluded that BJC safety basis documents are outdated and require upgrades to comply with 10 CFR 830 Subpart B and annual update requirements. The assessment identified 88 findings and 192 observations. Four of the findings were determined to be reportable conditions and occurrence reports were filed. No imminent threats to workers, the public, or the environment were identified.
- **Compensatory Measures** - The BJC Safety Basis Review Board evaluated all findings and observations and identified only one compensatory measure required. The compensatory measure initially identified for the Waste Examination and Assay Facility was to upgrade procedure controls with respect to verification of minimum container dimensions for the facility. The recommended compensatory measure was related to flow down from Nuclear Criticality Safety Evaluation (NCSE)-OR-7824-1485 (not a safety basis document). A review of the NCSE by the responsible nuclear criticality safety engineer determined that the cited requirement for minimum container dimensions is not a limit and control of NCSE-OR-7824-1485.

- **Near-term Actions** - Findings and observations from the SBFDF assessments have been entered into the BJC Issues and Corrective Action Tracking System (I/CATS) and will be tracked to completion. Approval of corrective actions for all findings and observations is nearing completion, with schedules for completion consistent with the significance of the condition. Corrective actions include procedural updates, training, resolution of administrative discrepancies and ambiguous statements in Safety Basis Documents, improvements to configuration management implementation, etc. A number of these items will be addressed in the Safety Basis annual update or upgrading of the safety basis to achieve 10 CFR 830 compliance. The majority of the remaining corrective actions will be completed this fiscal year.

Safety Basis Technical Adequacy Assessment – BJC and DOE completed a joint review of a select group of 15 nuclear facilities (based on operating status, critical mission, and hazard/risk potential) to determine the adequacy of the Safety Bases' hazards and accident analyses. This included assessing the safety basis for completeness of the postulated accident list, reviewing technical adequacy of analysis, and assuring that key analysis assumptions were translated into controls. A copy of the report and direction for implementing compensatory measures and further actions are provided in Attachment 2.

- **Conclusion** – In general, the Safety Bases for all of the facilities have assessed the dominant hazards of earthquake and fire initiators and have developed controls protecting most key analytical assumptions. The Safety Basis identified controls have appropriately flowed down to procedures or Operational Safety Requirements/Technical Safety Requirements. Several immediate compensatory measures were recommended and are being implemented as summarized below. The review also identified seven actions requiring further analysis. In addition, a number of improvements were recommended for incorporation in the upgrade of the documents for 10 CFR 830 compliance.
- **Compensatory Measures** - Direction has been provided to the responsible BJC MOPs relative to implementation of the following compensatory measures:
 - **Radioactive Solid Waste Storage Facilities, Buildings 7823B, C, and D** – Suspend radionuclide inventory increases pending: definition of inventory limits based on the consolidation of B, C, and D as one facility (remove segmentation assumption); and, analysis of large fire initiated releases (broader than current safety basis assumptions).
 - **High-Level Radiation Analytical Facility, Building 3019B** – Place the east wall under configuration management as a passive design feature.
 - **UF6 Cylinder Storage Yard, 1066-B** – BJC recommends that DOE review and approve in advance, the types of materials to be moved by train near the 1066-B cylinder yard at ETTP, pending the results of an evaluation through the Unreviewed Safety Question Determination (USQD) process. Note that the tracks have been leased by DOE to the Community Re-use Organization of East Tennessee (CROET). Another DOE prime contractor (BNFL) utilizes the tracks to ship wastes offsite. Thus, BJC has no authority to review the materials moved by train by a leasee or another DOE prime contractor. BJC will initiate an USQD against control of materials transported by train on these tracks.
- **Near-term Actions** - Findings and recommendations from the joint DOE/BJC Safety Basis Technical Adequacy Assessment have been reviewed and additional analyses initiated. The assessment report findings and recommendations are being entered into I/CATS for tracking and control. A schedule for completion of the recommended additional analyses is being compiled.

DOE Headquarters Independent Safety Basis Assessment of BJC and DOE Oak Ridge Operations Office – During December 2001 and January 2002, a DOE Headquarters team performed an independent assessment and reviewed safety basis documents for all ORO EM Category 2 and 3 nuclear facilities. Nuclear safety procedures and other related documents, such as the Work Smart Standards, were also reviewed, and interviews were conducted with numerous BJC and ORO managers and personnel and with the DNFSB site representative. The team confirmed that significant improvement is needed in management of the safety basis for DOE ORO EM nuclear facilities and presented findings requiring action by DOE and BJC.

- **Conclusion** – The team determined that there is no imminent risk to the public or workers from readily releasable nuclear materials. The team recommended that upgrading the safety basis program in the

near term and re-evaluation of the previously submitted 10 CFR 830 Subpart B compliance plan should help resolve the TSR, OSR, and safety basis hazard and accident analysis concerns.

- **Compensatory Measures** - Two areas that were identified as requiring further assessments have been or are being addressed. The Safety Basis Technical Adequacy Assessment summarized above has evaluated the technical adequacy concerns raised by the DOE Headquarters team. Compensatory measures pertaining to these technical adequacy concerns are cited in the previous paragraph. The Safety Basis Technical Adequacy Assessment also evaluated the fire protection and emergency programs. The assessment did not identify any necessary compensatory measures, but did confirm the need for program improvements. An assessment of Fire Protection and Emergency Management Safety Management Programs for each BJC nuclear facility is underway and planned for completion in March. The report also recommended immediate action to improve inventory controls relative to facility categorization. Improvements in this area are being developed.
- **Near-term Actions** - Per discussions with DOE ORO, a coordinated Corrective Action Plan will be prepared. A preliminary assessment of the findings and recommendations in this report indicate a high correlation to corrective or improvement actions already initiated by BJC.

Other Actions

Other actions related to the DOE Review or the October 15, 2001 DNFSB letter include:

- Radiological and Category 3 nuclear facilities are being reviewed to assure that categorization is fully compliant with DOE Standard 1027 and DOE ORO expectations.
- Evaluation of 109 DOE Orders of Interest to the DNFSB has been completed. Four Orders were approved for incorporation into the BJC contract in January; 98 Orders either did not apply to the BJC contract, had been superceded, had no bearing on BJC contract, were in the contract, or were being implemented. DOE is considering the remaining seven Orders for incorporation into the contract.
- Safety Basis process improvements are under way including: revision of the USQD procedure; procedural improvements; delegation of approval authority for less-than-category-3 safety documents; updates to Nuclear Facility Safety subcontract technical specifications; preparation of a company level Nuclear Safety Assurance Policy; and, preparation of Documented Safety Analysis (DSA) guides. These DSA guides will be used in development of 10 CFR 830-complaint upgrades to the current BJC safety basis documents.
- A new Training and Qualification Program for personnel assigned to nuclear and radiological facilities is being developed and implemented.
- Annual updates are underway for Category 2 Nuclear Facility Authorization Agreements and for Category 2 and Category 3 Safety Basis documents.

Long-term Actions - As discussed with DOE, BJC is updating the plan and schedule for submittal of 10 CFR 830-complaint upgrades to the current BJC safety basis documents. We have established a joint BJC/DOE Safety Basis Working Group (SBWG), and are meeting weekly to address topics associated with our safety basis program and planned upgrades. Both DOE EM and Nuclear Safety Division are actively participating in the working group. Recent SBWG reviews have addressed the specific DSAs to be developed and the safe harbor method to be applied. The majority of these matters have been resolved, and final agreement on the remaining topics is expected within the next few weeks.

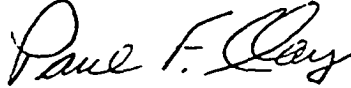
An updated plan and schedule for submittal of 10 CFR 830-complaint upgrades is under development and will be completed by mid April 2002, following meetings with DOE and Mr. Paul Gubanc, who is on special detail to EM-1.

Overall Safety Assessment

Based on the reviews, compensatory measures, and actions outlined above, it is my assessment that the facilities being managed by BJC are being and can continue to be operated in a safe and compliant manner, pending upgrades to the Safety Basis documents.

We look forward to working with DOE to further refine our plans for prioritizing 10 CFR 830-compliant upgrades to the current documents. If you have any questions, please contact me at 241-1188, or John Lyons at 574-3166.

Sincerely,



Paul F. Clay
Vice President and General Manager

PFC:JRL:ljs
GM-02-0013

Attachments:

1. Safety Basis Flow Down Assessments for Category 2 and 3 Nuclear Facilities, February 18, 2002
2. Safety Basis Technical Adequacy Assessment, March 1, 2002

Distribution w/attachments:

Leah Dever, DOE
Gordon Dover
Gil Drexel
Greg Eidam
Charlie Frye
R. D. George
Tom Hash
Steve Houser
Steve Liedle
John Lyons
Jimmy Massey
Margaret Morrow, DOE

Joe Nemec
Andy Phelps
Robert Poe, DOE
Steve Richardson
Sharon Robinson, DOE
Don Seaborg, DOE
M'balia Tagoe
Ed Trujillo
Mike West
Bruce Wilson
File – EMEF-DMC - RC

Letter to Lori Fritz from Paul Clay (GM-02-0013, dated 3/4/02)
Subject: Actions to Determine Safety of Ongoing Bechtel Jacobs Company LLC, Environmental
Management Operations

Attachment 1

Bechtel Jacobs Company LLC

Safety Basis Flow down Assessment
For Category 2 and 3 Nuclear Facilities

February 18, 2002

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DOE Contract No. DE-AC05-98OR22700

Job No. 23900

February 18, 2002

U. S. Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831

Attention: Ms. Lori Fritz
Acting Assistant Manager for Environmental Management

Subject: Safety Basis Flowdown Assessments for Category 2 and 3 Nuclear Facilities

Dear Ms. Fritz:

Attached for your information is the summary report of the twenty-eight safety basis flowdown assessments of Bechtel Jacobs Company LLC Category 2 and 3 Nuclear Facilities. These assessments were performed as a part of the BJC corrective action plan associated with Noncompliance Tracking System report NTS-ORO-BJC-BJCPM-2001-0004. The findings and observations from these assessments have been entered into the BJC Issues/Corrective Action Tracking System (ICATS) and will be tracked to closure.

Based on conditions identified during these assessments and the associated DOE Independent Assessment led by Dae Chung, two additional assessments are underway to address safety basis technical adequacy (joint review with DOE) and safety management program implementation for fire protection and emergency management.

Any questions regarding these assessments may be directed to John Lyons (574-3166) or Bruce Wilson (241-5113).

Sincerely,

A handwritten signature in cursive script that reads "Paul F. Clay".

Paul F. Clay
Vice President and General Manager

PFC:JRL:bh
GM-02-0006

Attachment: As stated

cy: M. J. Hitchler
R. E. Lynch
J. R. Lyons
J. C. Massey
M. K. Morrow, DOE
J. A. Mullis, DOE

J. F. Nemec
R. W. Poe, DOE
B. A. Wilson
File - PFC
File - EMEF-DMC-RC

The following documents are enclosed.

Enclosure 1 - Summary Report of Bechtel Jacobs Company Safety Basis Flowdown Assessment

Enclosure 2 – List of the Individual Facility Safety Basis Flowdown Assessment Reports

Enclosure 3 – Summary Listing of Safety Basis Flowdown Assessment Findings and Observations by Facility

Enclosure 4 – Safety Basis Flowdown Assessment Plan

Enclosure 5 – Flowchart of Safety Basis Assessment Process

Enclosure 6 - Criteria for Selection of Assessors and List of Assessors

Enclosure 7 - The Safety Basis Review Board Charter

Enclosure 1
Summary Report of Bechtel Jacobs Company
Safety Basis Flowdown Assessment

K. M. ... Feb 15, 2002
For leader

Enclosure 1
Summary Report of Bechtel Jacobs Company
Safety Basis Flowdown Assessment

Assessment Overview

Safety Basis Flowdown Assessments were conducted for all BJC category 2 and 3 nuclear facilities in accordance with the Safety Basis Flowdown Assessment Plan, ECS/NS-02-01, Rev 1, November 26, 2001 (Enclosure 4). The assessments reviewed the following areas:

1. Facility categorization
2. Flow down of safety basis requirements to implementing documents
3. Field implementation of SB related requirements
4. Knowledge, training, and qualification of facility management responsible for maintaining operations in accordance with safety basis controls
5. Flow down of requirements to subcontractors.

The Safety Basis Flowdown Assessments were conducted by assessors independent of the facility, with extensive nuclear industry experience, and with experience performing comparable assessments and inspections (Enclosure 6). Where possible DOE Facility Representative and Program Managers were involved in the assessments or in review of the assessment results. The draft assessment reports were reviewed by the responsible BJC Manager of Project and associated line management staff for factual accuracy, and by the BJC Safety Basis Review Board (Enclosure 7) for content and technical adequacy.

The Safety Basis Review Board made determinations, with the assessment teams, of Findings and Observations, consistent with the BJC procedure BJC-PQ-1210, Issues Management Program. In accordance with that procedure, the following definitions were used:

Finding: A direct violation of a requirement.

Observation: A condition that could be improved or strengthened. An observation is not a requirement violation; it is a method by which opportunities for managerial or programmatic improvements may be identified.

The responsible BJC Manager of Projects is responsible for determination of reportability of findings and for development and implementation of corrective actions.

Assessment Results

Twenty eight (28) separate Safety Basis Flowdown Assessment Reports were issued (Enclosure 2).

The results of the 28 assessment reports are summarized below:

- Findings 88
- Observations 192
- Proficiencies 6
- Occurrence Reports 3

Enclosure 3 provides a Summary Listing of Safety Basis Flowdown Assessment Findings and Observations by Facility. All assessment findings and observations have been entered into the BJC Issues/Corrective Action Tracking System (I/CATS) and will be tracked to closure. Corrective Actions for identified findings and observations are being defined by the responsible line managers, and will be approved by the Safety Basis Review Board Chairman.

Reportable Conditions

Three of the findings identified during the assessments were determined by the responsible Manager of Projects to be reportable conditions. The occurrence reports resulting from these assessments are as follows:

- ORO--BJC-X10ENVRES-2001-0033, "*Potentially Inadequate Safety Analysis (PISA) Storage Casks Located Outside the Building 3517 Confines*"
- ORO—BJC-K25GENLAN-2002-0001, "*Management Concern Regarding Vagueness of a Statement Made in the Technical Safety Requirements for the UF6 Cylinder Storage Yards*"
- ORO—BJC-X10WSTEMRA-2002-0001, "*Violation of Technical Safety Requirement Concerning Particulate Inventory Control.*"

General Conclusions

The following general conclusions have been identified from a review of the individual assessments:

1. BJC safety basis documents are outdated and require updates to comply with 10 CFR 830 Subpart B and annual update requirements.
2. With the following exceptions, the assessment teams concluded that there were no significant questions or concerns with respect to operations safety. The exceptions included:
 - Building 3517, Fission Product Development Laboratory, potential for safety basis inadequacy [ORO--BJC-X10ENVRES-2001-0033, "*Potentially Inadequate Safety Analysis (PISA) Storage Casks Located Outside the Building 3517 Confines*"] – The final occurrence report has been submitted and is awaiting DOE approval. The corrective action plan has been approved by the SBRB. There are no other operational concerns with the casks storage.
 - Building 3019B, High Radiation Level Analytical Laboratory, concern regarding planned Fire Department Response (resolved)

- K-27 LEU Process Building, concern that inspections required in the operational controls section of the Basis for Interim Operations were not being performed. A revision to the facility inspection procedure/checklist will be made to clearly document that the inspection requirements are being met.
 - Waste Disposition facilities occurrence report, ORO—BJC-X10WSTEMRA-2002-0001, “Violation of Technical Safety Requirement Concerning Particulate Inventory Control.” does not indicate an immediate operational safety concern. As an interim measure each waste container is being individually evaluated for compliance with the TSR requirement prior to being accepted at WD facilities. This measure will continue until the TSR requirement is flowed down to waste generators as part of the waste certification program.
3. The assessments identified no imminent safety concerns, therefore only a limited number of compensatory measures were determined to be required.
 4. Facility categorizations were correct and data was available to support the categorization. The assessment teams determined that some facilities have had a significant reduction in hazardous material inventory and may be candidates for downgrading.
 5. Rigorous flowdown of safety basis requirements to implementing documents needs improvement. Note: Individual flowdown issues are identified in the facility assessment reports.
 6. Field implementation of safety basis related requirements needs improvement in many of the facilities.
 7. Knowledge of facility managers in general is adequate. However, clear definitions of expectations and improvements in training and qualifications of facility personnel are required at many of the facilities.
 8. BJC subcontractors are using the correct safety basis documents; however, subcontract flowdown mechanisms need improvement.
 9. Safety basis crosswalks developed during the assessments need to be formalized and maintained as a management tool to assure current and accurate requirement flowdown to the governing implementing documents.
 10. A requirement to generate an implementation plan for each safety basis prior to implementation is not currently required. Consideration should be given to requiring an implementation plan for each safety basis document prior to the document becoming effective.

Proficiencies

The following proficiencies were identified in the individual assessment reports:

- Subcontractor support for NCS and Fire Protection at the Portsmouth site were capable and supportive of the BJC activities
- The Portsmouth site has initiated a comprehensive training program for managers and supervisors regarding the importance of and roles and responsibilities for the safety basis for operation of facilities.
- The Portsmouth site has effectively implemented and used the USQD/USQD screening process as evidenced by the large number that have been performed.

- The Paducah project has established a safety basis flowdown matrix that captures the safety basis requirements and how the requirement is flowed into implementing procedures for both self performed work and work performed by the subcontractor. The matrix identified where the flow down was deficient and the required actions to fix the deficiency.
- The Paducah project is identifying items in procedures as items required to meet safety basis requirements. This helps ensure that changes to procedures that impact SB requirements can be easily identified. It also identifies to procedure users the steps of procedures that have increased importance.
- The Duratek Federal Services document management center, the requirements flowdown and requirements tracking system, and the training program documentation systems being used at the ORNL Liquids and Gaseous Low Level Waste Operations Facilities are models of efficiency, accuracy, and professionalism.

Enclosure 2
List of the Individual Facility
Safety Basis Flowdown Assessment Reports

K. M. W. Feb 15, 2002
Team Leader

List of the Individual Facility Safety Basis Flowdown Assessment Reports

1. ORNL Tower Shielding Facility
2. ORNL Building 3038
3. ORNL Interim Waste Management Facility 7886
4. ORNL Building 3019-B
5. ORNL Building 3517
6. ORNL Oak Ridge Research Reactor
7. ORNL Pits, Trenches, and Augered Holes
8. ORNL Bulk Shielding Facility
9. ORNL Federal Facility Agreement Tanks
10. ETTP UF6 Cylinder Yards
11. ORNL Liquids and Gaseous Waste Operations
12. Portsmouth Site
13. ORNL Molten Salt Reactor Experiment
14. ETTP K-25 Building
15. ETTP K-27 Building
16. ORNL Gunnite and Associated Tanks and ORNL Tank W-1A Removal
17. Paducah Site
18. Y-12 Waste Disposition (WD) Depleted Uranium Oxide Storage Vaults
19. ETTP WD K-25 Vaults
20. ETTP WD K-33 Storage Pad
21. ORNL WD Radioactive Solid Waste Storage Facilities
22. Y-12 WD Old Salvage Yard
23. ORNL WD Retrievable Waste Storage Well Facilities
24. ORNL WD Waste Examination and Assay Facility
25. ORNL WD Transuranic Waste Storage Facilities
26. ORNL WD Radioactive Solid Waste Storage Pads
27. ORNL WD Remote Handled Transuranic Waste Storage Facilities
28. ORNL WD Solid Waste Compactor

Enclosure 3
Summary Listing of Safety Basis Flowdown Assessment
Findings and Observations by Facility

K. M. Feb 15, 2002
Team Leader

SB Flowdown Summary

Finding and Observation Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
Tower Shielding Facility Greg Eidam, ORNL	1. Seventy-two experimental shields were removed from the Tower Shielding Facility in mid-1998. This effort was initiated by the previous prime contractor and completed by BJC. Although removal of the shields decreases the quantity of on-site hazardous materials and makes the facility safer, it is not clear that changes to the facility were documented and safety analyzed in accordance with USQD requirements <u>before</u> the change was made. A USQD (or USQD Screening) may not have been prepared.	1. The Authorization Agreement (AA) does not list all of the documents that are the safety basis for the TSF and lists technical specifications that are no longer being followed.	None recommended.	No significant questions or concerns with respect to operations safety.
Building 3038 Isotope Develop Laboratory Greg Eidam, ORNL	1. No unreviewed safety questions determination (USQD) was prepared for As-found Conditions that were Potentially Outside of the Safety Basis (SB).	<ol style="list-style-type: none"> 1. Ambiguously Defined Primary Containment System Boundary 2. Unclear Surveillance Frequency Requirements for Primary Containment System Surveillance 3. Configuration Management Program Requirements for the 3038 Primary Containment System are Ambiguous 4. Qualification Program for Facility Operations Staff Does Not Specifically Address Safety Basis Requirements 	None Recommended	No significant questions or concerns with respect to operations safety.
Building 3517 Fission Product Develop Laboratory Greg Eidam, ORNL	<ol style="list-style-type: none"> 1. Potentially inadequate safety analysis for radioactive thermoelectric generators (RTG) and radioactive material stored in casks outside of Building 3517 that are not addressed in safety basis documents. 2. Some hazardous material is not stored as described in the administrative controls section of the OSR 	<ol style="list-style-type: none"> 1. Unclear surveillance frequency requirements for the primary containment system 2. Configuration management program requirements for the 3517 primary containment system are ambiguous. 3. Ambiguously defined primary containment system boundary 		<p>Concern with potential safety basis inadequacy.</p> <p>Occurrence Report ORO--BJC-X10ENVRES-2001-0033, "Potentially Inadequate Safety Analysis (PISA) Storage Casks Located Outside the Building 3517 Confines"</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
7886 Interim Waste Management Facility Charlie Fryc/ Waste Operations	None	<p>1. There is no approved BJC procedure to perform surveillance and maintenance of the IWMF. The BJC Facility Manager currently uses a Weskem procedure.</p> <p>2. The current IWMF Safety Basis documents are listed on the BJC SB website and are controlled and available in the BJC Document Management Center (DMC) at ETPP, Building K-1002. References 1 and 2 are listed on the BJC SB website without a notation that the SAR and TSR were commented and not approved by DOE (see Ref. 3). <u>Correction will be handled by the Nuclear Safety Organization as a programmatic matter.</u></p>	None Recommended	No significant questions or concerns with respect to operations safety.
Building 3019B High Radiation Level Analytical Lab Greg Eidam/ORNL	1. The UT-B fire department pre-fire plan for 3019B is not fully compliant with the compensatory measures of the JCO and associated SER.	<p>1. Not all the requirements of the compensatory measures identified in the JCO and the DOE SER are fully flowed down to implementing procedures, signs, or other implementing means.</p> <p>2. Some Descriptions in Attachment A to the JCO do not have implementing controls to ensure they remain as described.</p>	None Recommended	One operational concern existed regarding the planned response of the ORNL Fire Department to a Building 3019 fire being contrary to the current safety basis for 3019-B.
Oak Ridge Research Reactor (ORR) Greg Eidam/ORNL	1. The ORR pool walls required by DOE-SER-OR-3042-0003 to be safety significant design features for safety, are not being maintained under configuration management.	<p>1. Specific inspections for the storage pool wall structure integrity, a safety significant design feature for safety, are not being performed.</p> <p>2. USQD-OR-3042-0018 did not have calculations or documents to support an assumption.</p> <p>3. The Technical specifications in the subcontract did not contain the ASA, SER, or USQDs required to describe the SBs for the facility.</p> <p>4. The December 21, 2001 list of SB documents did not include USQD-OR-3086-0030.</p> <p>5. The rigor of operations in implementation of facility controls needs improvement.</p> <p>6. A safety feature used to prevent or mitigate hazards not screened out in the ASA may no longer be an important safety feature.</p> <p>7. The project is using the monitron alarm rather</p>	None Recommended	No significant questions or concerns with respect to operations safety.

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>than the pool level as the primary basis for facility evacuation without having performed a USQD.</p> <p>8. BJC has not established a consistent approach to the training and qualification of personnel functioning in a facility manager role for nuclear facilities.</p>		
<p>ORNL Pits Trenches and Augered Holes Greg Eidam/ORNL</p>	<p>None</p>	<p>None</p>	<p>None Recommended</p>	<p>No significant questions or concerns with respect to operations safety.</p>
<p>ORNL Federal Facility Agreement Tanks Greg Eidam/ORNL</p>	<p>None</p>	<p>None</p>	<p>None Recommended</p>	<p>No significant questions or concerns with respect to operations safety.</p>
<p>ORNL Bulk Shielding Facility Greg Eidam/ORNL</p>	<p>None</p>	<p>The Bulk Shielding Facility Authorization Agreement (AA) is out-of-date.</p>	<p>None Recommended</p>	<p>No significant questions or concerns with respect to operations safety.</p>
<p>ETTP UF6 Cylinder Yards M'balia Tagoe/ETTP</p>	<p>FM-1) The latest FHA was issued July 1999 and includes a requirement for procedures to identify allowable parking areas for the cylinder yards. This requirement has not been flowed into implementing procedures.</p> <p>FM-2) Some safety basis documents were not available or readily retrievable from the DMC at the time of the assessment activity</p> <p>FF-1) K/D-6572, <i>Technical Safety Requirements for the K-25 Site UF6 Cylinder Storage Yards</i>, requires that the IFSM organization perform periodic validations of the adequacy of the safety documentation. The IFSM reviews emergent safety documentation through USQD or safety basis document approval, however, the intent of periodic validations is not defined nor is there evidence that the technical adequacy of safety documentation is periodically evaluated.</p> <p>FF-2) Some requirements in K/D-SAR-29, <i>K-25 Site UF6 Cylinder Storage Yards Final Safety Analysis Report</i>, are not flowed into implementing procedures.</p>	<p>OF-1) K/D-6572, <i>Technical Safety Requirements for the K-25 Site UF6 Cylinder Storage Yards</i>, requires that "Lines of authority, responsibility, and communication established... Relationships documented ... job descriptions for key personnel..." BJC-GM-1400, <i>Integrated Safety Management System Description</i> defines lines of authority and responsibilities; however, a job description for the UF6 cylinder program manager does not exist. The function of the facility manager is described in generic terms in ET-1002. In addition, the UF₆ Cylinder program Manager is not identified as a key person in BJC's prime contract with DOE.</p> <p>OF-2) K/D-SAR-29, <i>K-25 Site UF6 Cylinder Storage Yards Final Safety Analysis Report</i>, does not acknowledge the operation of the fire protection system transition from LMES to CROET/OMI.</p> <p>OF-3) K/OPS-35, <i>Basis for Interim Operation of the UF6 Cylinder Storage Yards</i>, and K/D-SAR-29, <i>K-25 Site UF6 Cylinder Storage Yards Final Safety Analysis Report</i>, state that ultrasonic tests are performed but implementing procedures do not</p>	<p>None Recommended</p>	<p>No significant questions or concerns with respect to operations safety.</p> <p>Occurrence Report ORO—BJC- K25GENLAN-2002-0001, "Management Concern Regarding Vagueness of a Statement Made in the Technical Safety Requirements for the UF6 Cylinder Storage Yards"</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p>FF-3) A configuration control program has not been established in compliance with K/D-SAR-29, <i>K-25 Site UF6 Cylinder Storage Yards Final Safety Analysis Report</i>, and BJC-procedure DE-A-0500, <i>Configuration Management Program</i>.</p> <p>FF-4) Some requirements in K/OPS-35, <i>Basis for Interim Operation of the UF6 Cylinder Storage Yards</i>, are not flowed into implementing procedures.</p> <p>FF-5) Both K/OPS-35, <i>Basis for Interim Operation of the UF6 Cylinder Storage Yards</i>, and K/D-SAR-29, <i>K-25 Site UF6 Cylinder Storage Yards Final Safety Analysis Report</i>, are active safety authorization basis documents but have contradictory information. There is no direction provided on which document takes precedence in the case of conflict.</p>	<p>specify criteria for selecting cylinders to test.</p>		
<p>ORNL LLLW Operations Charlic Frye/Waste Ops</p>	<p>TSRs WM-LGWO-7856-TSR-R3, WM-LGWO-2649-TSR-R3, AND WM-LGWO-7877-TSR-R1 do not include an appendix for facility design features for safety as required by DOE Order 5480.22</p>	<ol style="list-style-type: none"> 1. No flowdown of the requirement to not transfer when the vault plug is removed. There is an accident mitigation feature to not perform transfers when the vault plug is removed. The supervisor does monitor and document the operation with the plugs removed, but there is no formal flow down to ensure that the requirement is met. 2. No validation of program adequacy of a service contractor. In the LLLW BIO, Hoisting and Rigging procedure is an accident preventor for a dropped load initiating a release of LLLW. UTB or WESKEM are the contractors used for the hoisting and rigging activity. There is no flowdown of the requirement to ensure there is an adequate Hoisting and Rigging program at UT-B. WESKEM's program adequacy is validated by BJC through 		

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>Waste Disposition; and Duratek FS is responsible for program adequacy of sub-tier subcontractor.</p> <ol style="list-style-type: none"> 3. BJC STR and Staff Training on SB documents lacks formality. There are training requirements for all levels of BJC personnel who are involved with SB documents. BJC has extensive Required Readings on SB procedures and USQD processes. The only formal course is in USQD's. There is no required reading documentation of SB's. All BJC Training required reading were current as of 11/13/01 except for one Safety Advocate. There is no company-wide guidance about who receives this type training. 4. Authorization Agreement not consistent with safety basis documents. Assessment conducted 10/25/01 by BJC project staff noted SAB omissions from the AA. The issue is entered in ICATS for AA discrepancies with corrective actions. 5. Unnecessary delay in processing findings and corrective actions. Five radiological facilities were identified with safety basis documents not in full compliance with BJC procedures in December 2000 during a Safety Authorization Basis Documents Survey. No corrective actions were created or accomplished until the October 25, 2001 project SAB review was performed. 		
Portsmouth Gil Drexel/Portsmouth	<ol style="list-style-type: none"> 1. Inadequate demarcation of Fissile Material Storage Arrays in X-7745R as required by Nuclear Criticality Safety Approval (NCSA)-7745R003.D00, 2. No Procedural Requirements Flowdown for administrative controls to minimize the impact of a large fire through the control of combustible 	<ol style="list-style-type: none"> 1. Discrepancies in SB Documents. 2. Management Initiative to Establish an Expanded Facility Manager Program Still in Progress. 3. Development of a Configuration Management Program Still in Progress. 4. Weaknesses in Training/Knowledge of FMs. 5. Discrepancies Between the Availability of 	None Recommended	<p>The review indicated that there were no significant questions or concerns with operational safety.</p> <p>The review did not identify any issues that would prohibit resumption of</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	materials in Cylinder Yards X-745 C&E.	<p>USEC and Wastren Operating Procedures in X-326 L-Cage.</p> <p>6. SB documents are not current, which has lead to a high number of USQDs and SERs.</p> <p>7. The Emergency Management Program does not incorporate DOE Order 151.1.</p>		activities that were suspended by BJC on December 3, 2001.
Depleted Uranium Oxide Storage Vaults/Shed Mike West/Waste Disposition	<p>1. The SAR contains a requirement for portable dry-type fire extinguishers to be located at specific places in the facility. Additionally a Gamewell fire alarm box located on the main power pole near the northeast corner of Vault 9285-1 is required. The existing Gamewell alarm pullbox is out of service and the life safety upgrades (LSU) pullbox was not initially found. Subsequent investigation found determined that the LSU pullbox was located near the stop sign at the West Portal Road. The facility Emergency Manual did not note the location of the new pullbox or the fire extinguishers.</p> <p>2. The SAR contains requirement for employees to receive facility specific training. No documented facility specific training was identified during the assessment.</p> <p>3. SER-YT-OUSV-0002 Requires an upgraded SAR to the DOE-STD-3009-94 format and content. The current SAR submittal is only a bas for interim operation until it is upgraded to the required standard format and content. An upgraded SBD has not been submitted.</p>	<p>1. Not all activities identified by the SB documents and management requirements documents are flowed into procedures. The items include a requirement to check that no free fluids are in drums prior to off site shipment, containers with flammable materials to be sampled or bulked per approved work procedures, and no procedural requirement to confirm forklifts maintenance and inspections are current prior to use.</p> <p>2. There is no documentation (such as required reading) that SB documents have been read by operations personnel.</p> <p>3. A mechanism does not exist to manage SB document with the Subcontractor.</p>	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.
K-25 Non Waste Disposition M'balia Tagoc/ETTP Projects	None	<p>1. Training on SAB documentation (e.g., K-25 BIO) is not required for the nuclear safety manager (ATI position of Facility Safety Specialist). While it was apparent that the nuclear safety manager was knowledgeable of SAB requirements, it is recommended that required reading on SAB documentation be added to the nuclear safety manager's training requirements..</p> <p>2. Section 2.1 of K/ER-335 requires that weak</p>	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>building areas be marked with flagging, painted hash marks on the floor, and panels to restrict access. Inspection revealed that some areas are marked with flagging but do not have painted hash marks on the floor. Other areas have painted hash marks on the floor but no flagging. No areas were viewed that had panels to restrict access. SAB wording would indicate that all three items are to be done. Facility practices and procedures appear to be reasonable but do not line up with the requirement.</p> <p>3. Section 5.2.3.3 of K/ER-335 requires compliance with NFPA 5056. This reference is a typographical error. NFPA 505 is the correct citation. However, for consistency with implementing procedures, a SAB reference to OSHA 29CFR1910.178 may be more appropriate. Note, NFPA 505 is a mandatory standard incorporated by reference in OSHA regulations.</p>		
<p>K-27 LEU Process Building M'balia Tagoe/ETTP Projects</p>	<ol style="list-style-type: none"> 1. The current BIO does not address the potential criticality concerns resulting from the presence of the nine containers of technetium-uranium. 2. Special requirements identified in the USQD, K-USQD-0054, "<i>Technetium Containers Identified During Facility Safety Walkdowns in K-27 Process Building</i>", May 1995, were not addressed in subsequent revisions to the K-27 facility's SB document. 3. The operational control required by section 6 of the BIO is not being fully performed. 	<ol style="list-style-type: none"> 1. Personnel interviewed did not have a complete set of SB documents. 2. Facility personnel did not maintain a crosswalk of the SB requirements to implementing procedures. 3. Facility personnel were not able to discuss accidents, initiating events, and/or the controls to prevent or mitigate (minimize the severity) the accidents described in the SB documents. 4. No training requirements were found for required reading of the SBs for management and facility personnel. Additionally, no specific training or qualification requirements exist for developing, maintaining, and implementation of SB documents for nuclear facilities. 5. USQD-ET-0333 R0, "<i>Technetium Containers Identified During Facility Walkdown</i>" was not on the December 21st list of SB Documentation list provided to DOE. 	<p>None Recommended</p>	<p>One significant concern in that the inspections required by the operational controls section of the BIO are not being performed</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<ol style="list-style-type: none"> 6. During the walkdown of the K-27 Building it was obvious that several pieces of electrical equipment had been de-energized and taken out of service, however signs were not in clear view. 7. Outdated sign for Criticality safety requirements was found. 8. The requirement in K-USQD-0054 to have permanent identification tags placed on each cylinder which clearly indicates the material inside the container and identify these as Fissile Materials-Technetium-Uranium complex or Mixture could not be verified. 9. Two USQDs were not included during the BIO update (K-USQD-0119 R1, and K-USQD-0054) sent to DOE for approval. In 2001. 		
<p>MSRE Greg Eidam/ORNL Projects</p>	<p>A computer program used to track inventory limits versus system pressure is not a program under QA controls. This issue was resolved during the assessment. In particular, MSRE personnel indicated that they would use manual calculations and independently check the calculations</p>	<ol style="list-style-type: none"> 1. Document discrepancies between the facility and the Document Management Center (DMC) as to what are current SB documents. 2. TSR surveillance requirements ambiguous and not flowed into operating procedures for pressure relief valves. 3. The configuration management program does not include a list of configuration items. 4. One minor anomaly noted during facility walkdown with regard to the calibration of a temperature recorder. 5. There is no flowdown of the requirement to maintain ClF3 concentrations less than limits identified in the BIO. 6. Ambiguities With Several Requirements in SER-7503-NSD-01 and Program Implementation. 7. No criteria established for monitoring differential pressures across Valve V-561 in procedures. 8. Incorrect wording in the BIO regarding main charcoal bed system valves. 9. No central location describing the education, 	<p>None recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		experience and other qualifications for a job along with the training qualifications of personnel performing that specific job. 10. There is no program in place to ensure that the fire protection engineering facility assessment is performed on a periodic basis.		
Tank W-1A and Suth Tank Farm GAAT Greg Eidam. ORNL Projects	None	None	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.
Paducah Site Gordon Dover/Paducah	1. The administrative control listed in the SAR for on-site worker training for required actions and emergency response and evacuation to minimize impact of a large fire are not included in any training for all on-site workers. 2. CHATs Cylinder handlers, slings, and cranes used to handle UF6 cylinders are designated safety significant but do not have a program that describes what maintenance elements are in place to ensure that they meet their intended requirements.	1. Authorization Agreements for The C-746Q and DMSAs, both category 2 facilities have been submitted to but not approved by DOE. 2. Lack of DOE approval for SB document submittals and updates has made maintaining a clear, precise SB very difficult. This has resulted in numerous USQs, USQDs, and SERs that comprise the SBs for the Paducah Project facilities. 3. Cylinders transferred to DOE/BJC from USEC are stored in a USEC cylinder yard rather and are being maintained by BJC in accordance with BJC procedures. However, USEC review of BJC procedures to assure consistency with USEC/NRC Safety Basis requirements has not been performed. 4. Computer software used to select cylinders to inspect and to record results of inspections of UF6 cylinders is not controlled in a configuration management program. 5. An administrative control required by the SAR for control of flammable and combustible materials in cylinder yards has not been fully implemented in inspection procedures. 6. Some SB requirements are not flowed down into implementing procedures. The specific items are identified on the Paducah Safety Basis (SB) Crosswalk Flowdown Matrix.	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
<p>Old Salvage Yard, Y-12 Site Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. An assessment of the flowdown requirements indicated no standing order or required reading concerning the limited access requirement to the facility or change in facility status has been performed as required by the JCO. 2. Instruments are not available to satisfy the JCO requirement of 0.5 sec for the Personal Radiation Detection Instrument response time. As a result, access to the facility is limited and equipment important to safety such as fire alarms and telephones are no longer being checked to determine if they are functioning. No routine facility checks are being performed in relation to equipment identified as important to safety. 	<ol style="list-style-type: none"> 1. Requirements or activities in the Safety Basis have not been incorporated into procedures. 2. An approved SAR with annual updates does not exist for the OSY. USQDs are not available to address identified deficiencies. As a result, the USQDs and SAR are inconsistent with each other and the procedures. 3. There was no documentation (such as required reading records) that the SBDs had been read by operations personnel. 4. A mechanism does not exist to effectively manage SB documents with the subcontractor. 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>
<p>K-33 Storage Pad, ETPP Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. No local emergency manual (LEM) was available at the K-33 Pad. A copy was located at security portal 8. Information in the LEM is not current. 2. Training needs to be put in place to ensure operators, supervisors, and managers understand SBDs and their contents including major nuclear materials of concern. In addition, a required reading program of SB documents by appropriate managers needs to be in place. 3. Requirements of NCSE-ET-K-33-1488 are not contained in the implementing procedures. 	<ol style="list-style-type: none"> 1. Descriptions in the BNFL SB documents do not reflect current BJC management systems for NCSEs (NCSAs) or other work controls process (EWP). 2. The WEKEM inspection leak testing and corrective actions procedure has been revised such that it no longer contains "Attachment 3" called out in USQD 2001-04 3. The WESKEM/BJC personnel are not aware of an Authorization Agreement for K-33. 4. There is no programmatic review process in place to periodically evaluate USQDs at ETPP. 5. Uncontrolled copies of the SB documents are maintained in the K-14213 documents center. An MOU between BJC and BNFL documents BNFLs responsibility for maintaining the SB documents. The current MOU needs to be amended to release controlled copies of the BIO to BJC and their subcontractor. 6. A mechanism does not exist to effectively 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
K-25 Vaults, ETPP Mike West/Waste Disposition	<ol style="list-style-type: none"> 1. The requirements to ensure changes in tenant managed areas and operations in the K-25 Building are appropriately evaluated to ensure compliance with the facility SB documents and other contract requirements as documented in the MOU are not captured in the WESKEM USQD procedures. In addition, the requirement to forward copies of USQDs and NCSEs to the FMSIT subcontractor is not implemented. 2. Facility emergency manuals for Vaults 1X, 2X, and 16A are not current. 3. The requirement for DOT-approved containers in K-USQD-0312 does not flow down into implementing procedures. 4. A process does not exist that describes, reviews, updates, and maintains current the listing of active and applicable SB documents for the K-25 Vaults. 5. Training is not in place to ensure operators, supervisors, and managers understand the SBDs and their contents including major nuclear materials of concern. In addition, a required reading program of SB documents by appropriate managers is not in place. 6. Requirements of an NCSE technical document do not flow down into the implementing procedures and/or is not fully implemented in the field. 	<p style="text-align: center;">manage SB documents with the subcontractor.</p> <ol style="list-style-type: none"> 1. Descriptions in SB documents do not reflect the current BJC management systems for NCSEs versus NCSAs. 2. Operations/activity descriptions in the SB documents need to be updated to reflect activities no longer performed. 3. Procedures do not adequately or completely address an SB requirement. 4. Procedures need to convey the requirement rather than reference the SB document. 5. The <15% inventory limit for liquid hazardous wastes needs to be stated as a volume or mass limit to support effective control. 6. WESKEM procedures do not limit placement of combustible materials in the vaults as required by the BIO. 7. The WAC does not define limitations for transuranic activity <2% of the uranium activity. 8. WESKEM procedures do not address suspension of fissile material operations during loss of operation conditions for the R/CAAS per the TSR. 9. Flowdown of an NCSE technical supporting document is not adequate. 	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.
Waste Examination and Assay Facility Mike West/Waste Disposition	<ol style="list-style-type: none"> 1. The SBDs identify requirements for equipment; however, some of the subject equipment has been removed from the facility. 2. The USQD Program is tasked to ensure that changes regarding organizational structures and responsibilities are adequately reviewed and to ensure that appropriate actions are implemented. It was determined that changes regarding organizational structures and responsibilities were implemented without USQD coverage. 	<ol style="list-style-type: none"> 1. The SBDs identify requirements that are not adequately addressed in the operating procedures, or the procedure(s) are out of date. 2. The SBDs identify requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active. 3. The SBDs identify requirements that are predicated on the equipment being in operational status. Some of the equipment is in 	Upgrade Procedure controls with respect to verification of minimum container dimensions for the 7824 Facility.	The review indicated that there were no significant questions or concerns with operational safety.

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p>Implementation of the USQD program needs improvement and needs to be clarified in the Canberra contract.</p> <p>3. The SBDs identify requirements regarding equipment that is in operational mode, and the procedures describe equipment operation; however Canberra is not authorized to operate some of this equipment.</p> <p>4. The SBDs identify TSR requirements regarding the particulate size for TRU waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for waste received from the waste generator. Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "<i>Violation of Technical Safety Requirement Concerning Particulate Inventory Control.</i>"</p>	<p>standby mode and this is not reflected in the current procedures.</p> <p>4. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 2 on page 6 deals with identification of the applicable SB documents and flowdown to the subcontractor. Not all SB documents have been identified and contractually flowed down to Canberra.</p> <p>5. The SBDs identify requirements regarding the educational requirements for WEAf facility workers. Procedures do not address the specific educational requirements mandated by the SBDs.</p> <p>6. The SBDs identify a requirement regarding the Evacuation Drills. BJC procedures regarding Evacuation Drills appears to have been cancelled without replacement.</p> <p>7. The SBDs identify requirements regarding the Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement.</p> <p>8. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents.</p> <p>9. The SBDs identify a requirement regarding the training of non-Canberra personnel. Training procedures do not clearly cover the training and qualifications of non-Canberra personnel who perform hands-on work at the WEAf.</p>		
Radioactive Solid Waste Storage Facilities 7572, 7574, 7842, 7878, 7879	1. The four waste Types defined by the SAR and used for a direct control of particle size for dispersion analyses are not addressed in currently-	1. The Configuration Management (CM) program has not been implemented effectively through subcontractors.	None Recommended	The review indicated that there were no significant questions or concerns with

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
Mike West/Waste Disposition	<p>used procedures as required.</p> <ol style="list-style-type: none"> 2. Unreviewed Safety Question Determinations (USQDs) were not performed to address changes in organizational structures and responsibilities stated in the SBD. There is no clear transition of duties and responsibilities established in the SBD from the one-contractor structure of 1998 to organizations that currently hold these responsibilities. There is no assurance that all responsibilities identified in the SBD have been transferred to current organizational entities. 3. Procedures have allowed for storage of waste containing up to 1% liquid which is in excess of the 0.5% maximum specified in the SBD. 4. Storage facilities have not tracked and managed inventories in terms of the number of 55-gal drums and the number of 4x4x6 boxes "or a comparable volume of other sized containers" as required by the SBD. 5. The database used for inventory control, DOTCALC, is not a validated/verified system. Formal procedures for use of the system do not exist. A corrective action, ICATS #3977, already exists to address this issue. 6. There is no documented evidence that currently used waste acceptance criteria were reviewed and approved by the Nuclear Criticality Safety (NCS) organization as required. NCSA 69 cites an obsolete document as the WAC relied upon; there is no evidence that currently used documents were reviewed and approved for use with NCSA 69. 	<ol style="list-style-type: none"> 2. Programmed maintenance is not comprehensively planned and implemented. 3. A formal procedure for designation, tracking and control of documents that shall comprise the Safety Basis for facilities has not been established and implemented. 4. Obsolete organizational identification and responsibility citations are spread throughout the SBD. It is thus difficult to ensure that all necessary duties are currently assigned. 5. The requirement to "provide NCS requirements for a new or a change to an existing Fissile Material Operation through the NCS evaluation process" creates excessive delay in the pickup, and storage of waste which would otherwise be handled in accordance with the SBD criteria for less than 250 g UFEM. 6. The BJC procedure for conduct of emergency drills was cancelled without replacement. 7. Waste handling operations are not proceduralized. 8. Training procedures do not clearly cover the training and qualification of non-WESKEM personnel who perform hands-on work. 9. There is no uniform WESKEM policy regarding format for identification of the responsible person in procedures. See SR 174. 10. Alternative procedures for calculation of Pu isotopic content in waste authorized by NCSA-69 is not reflected in procedures. 11. There is no specific provision to inspect for excessive moisture condensation during waste storage facility inspections. 12. The interface between the EMEF Document Center and the WESKEM Document Center needs to be formally defined. 13. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with 		operational safety.

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents.</p>		
<p>Radioactive Solid Waste Storage Facilities 7823B, 7823C, 7823D, and 7823E Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The four waste types defined by the SAR and used for a direct control of particle size for dispersion analyses are not addressed in currently-used procedures as required. However, it appears that they are tracked sufficiently to maintain accurate facility radioisotope inventory control. 2. Unreviewed Safety Question Determinations (USQDs) were not performed to address changes in organizational structures and responsibilities stated in the SBD. There is no clear transition of duties and responsibilities established in the SBD from the one-contractor structure of 1998 to organizations that currently hold these responsibilities. There is no assurance that all responsibilities identified in the SBD have been transferred to current organizational entities. 3. Procedures have allowed for storage of waste containing up to 1% liquid which is in excess of the 0.5% maximum specified in the SBD. 4. Procedures fail to specify the limit that no individual container exceed 100 g 235UEFM and a requirement to confirm that the 250 g UFEM limit for the facility before a shipment is added to the facility is not stated. 5. The database used for inventory control, DOTCALC, is not a validated/verified system. Formal procedures for use of the system do not exist. A corrective action, ICATS #3977, already exists to address this issue. 6. Storage facilities have not tracked and managed inventories in terms of the number of 55-gal drums and the number of 4x4x6 boxes "or a comparable volume of other sized containers" as required by the SBD. 	<ol style="list-style-type: none"> 1. The Configuration Management (CM) program has not been implemented effectively through subcontractors. 2. Programmed maintenance is not comprehensively planned and implemented. 3. A formal procedure for designation, tracking and control of documents that shall comprise the Safety Authorization Basis for facilities has been established and implemented. 4. Obsolete organizational identification and responsibility citations are spread throughout the SBD. It is thus impossible to ensure that all necessary duties are currently assigned. 5. The requirement to "provide NCS requirements for a new or a change to an existing Fissile Material Operation through the NCS evaluation process" creates excessive delay in the pickup, and storage of waste which would otherwise be handled in accordance with the SBD criteria for less than 250 g UFEM. 6. The BJC procedure for conduct of emergency drills was cancelled and not replaced. 7. Waste handling operations are not proceduralized. 8. Training procedures do not clearly cover the training and qualification of non-WESKEM personnel who perform hands-on work. 9. There is no uniform WESKEM policy regarding format for identification of the responsible person in procedures. 10. There is no procedural provision for operation of the facilities in a standby mode. 11. There is no procedural requirement to locate portable fire extinguishers at each facility. 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<ol style="list-style-type: none"> 12. There is no specific provision to inspect for excessive moisture condensation during waste storage facility inspections. 13. A USQD for the RSWSF facilities was written for the consolidation of filter cake waste. The procedure written for this operation calls for the repackaging to be done in Building 7823, which is not a RSWSF facility. 14. Procedure WD-WM-SWO-501.36 cites several obsolete documents, is out of date and in need of upgrading. 15. Open-and-consolidate operations are not addressed by procedure. 16. The interface between the EMEF Document Management Center and the WESKEM DMC needs to be formally defined. 17. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents. 		
<p>Radioactive Solid Waste Storage Facilities 7831Q, 7831C, 7842B, 7842C, 7878A, and 7934 Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The four waste Types defined by the SAR and used for a direct control of particle size for dispersion analyses are not addressed in currently-used procedures as required. However, it appears that they are tracked sufficiently to maintain accurate facility radioisotope inventory control. 2. Unreviewed Safety Question Determinations (USQDs) were not performed to address changes in organizational structures and responsibilities stated in the SBD. There is no clear transition of duties and responsibilities established in the SBD from the one-contractor structure of 1998 to organizations that currently hold these responsibilities. There is no assurance that all responsibilities identified in the SBD have been 	<ol style="list-style-type: none"> 1. The Configuration Management (CM) program has not been implemented effectively through subcontractors. 2. Programmed maintenance is not comprehensively planned and implemented. 3. A formal procedure for designation, tracking and control of documents that shall comprise the Safety Basis for facilities has not been established and implemented. 4. Obsolete organizational identification and responsibility citations are spread throughout the SBD. It is thus difficult to ensure that all necessary duties are currently assigned. 5. The requirement to "provide NCS requirements for a new or a change to an existing Fissile 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p>transferred to current organizational entities.</p> <p>3. Procedures have allowed for storage of waste containing up to 1% liquid which is in excess of the 0.5% maximum specified in the SBD.</p> <p>4. Storage facilities have not tracked and managed inventories in terms of the number of 55-gal drums and the number of 4x4x6 boxes "or a comparable volume of other sized containers" as required by the SBD.</p> <p>5. The database used for inventory control, DOTCALC, is not a validated/verified system. Formal procedures for use of the system do not exist. A corrective action, ICATS #3977, already exists to address this issue.</p>	<p>Material Operation through the NCS evaluation process" creates excessive delay in the pickup, and storage of waste which would otherwise be handled in accordance with the SBD criteria for less than 250 g UFEM.</p> <p>6. The BJC procedure for conduct of emergency drills was cancelled and not replaced.</p> <p>7. Waste handling operations are not proceduralized.</p> <p>8. Training procedures do not clearly cover the training and qualification of non-WESKEM personnel who perform hands-on work.</p> <p>9. There is no uniform WESKEM policy regarding format for identification of the responsible person in procedures.</p> <p>10. There is no procedural provision for operation of the facilities in a standby mode.</p> <p>11. There is no procedural requirement to locate portable fire extinguishers at each facility.</p> <p>12. There is no specific provision to inspect for excessive moisture condensation during waste storage facility inspections.</p> <p>13. A USQD for the RSWSF facilities was written for the consolidation of filter cake waste. The procedure written for this operation calls for the repackaging to be done in Building 7823, which is not a RSWSF facility.</p> <p>14. Procedure WD-WM-SWO-501.36 cites several obsolete documents, is out of date and in need of upgrading.</p> <p>15. Open and consolidate operations are not addressed by procedure</p> <p>16. The interface between the EMEF Document Management Center and the WESKEM DMC needs to be formally defined.</p> <p>17. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents</p>		

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		for the facilities. Required reading and associated records were not in place for the facility SB documents.		
Retrievable Waste Storage Wells Facility 7822A, 7823A, 7827, 7829 Mike West/ Waste Disposition	<ol style="list-style-type: none"> 1. The four waste Types defined by the SAR and the limitation on particulates less than 10 microns in diameter established in the TSR, used for a direct control of particle size for dispersion analyses, are not addressed in currently-used procedures as required. Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "<i>Violation of Technical Safety Requirement Concerning Particulate Inventory Control.</i>" 2. Unreviewed Safety Question Determinations (USQDs) were not performed to address changes in organizational structures and responsibilities stated in the SBD. It was determined that changes to organizational structures and responsibilities were implemented without USQD coverage. 3. The calculation system and database used for inventory control, DOTCALC, is not a validated/verified system. Formal procedures for use of the system do not exist. A corrective action, ICATS #3977, already exists to address this issue. 4. Facilities 7822A and 7823A are empty, inactive wells transferred to the Surveillance and Maintenance (S&M) Program. However, a USQD was not processed to document that these units are in STANDBY or that the responsibilities for S&M have transferred. 	<ol style="list-style-type: none"> 1. The Configuration Management (CM) program has not been implemented effectively through subcontractors. 2. Programmed maintenance is not comprehensively planned and implemented. 3. A formal procedure for designation, tracking and control of documents that shall comprise the Safety Basis for facilities has not been established and implemented. 4. Obsolete organizational identification and responsibility citations are spread throughout the SBD. It is thus difficult to ensure that all necessary duties are currently assigned. 5. The BJC procedure for conduct of emergency drills was cancelled and not replaced. 6. Training procedures do not clearly cover the training and qualification of non-WESKEM personnel who perform hands-on work. 7. There is no uniform WESKEM policy regarding format for identification of the responsible person in procedures. 8. Operating procedure WD-OP-X501.15 erroneously references a "Ref. 6", which is not listed, for NCS limits. 9. The Inspection instructions of operating procedure WD-OP-X501.15 do not call for examination of the grading around the wells to ensure water runoff. 10. Operating procedure WD-OP-X501.15 does not contain a specific limitation that storage and retrieval operations may involve only one well at a time. 11. The interface between the EMEF Document Management Center and the WESKEM DMC needs to be formally defined. 	None Recommended	The review indicated that there were no significant questions or concerns with operational safety.

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>12. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents.</p>		
<p>Radioactive Solid Waste Storage/Staging Pads 7822J & 7842A Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The SBDs state requirements regarding the limits for liquid hazardous waste stored at the facility. It was determined that the operating procedures do not adequately define/clarify these limits consistent with the Safety Basis Document(s). 2. The SBDs state that eighteen topical areas are addressed by the Conduct of Operations Program; however, it was determined that only eleven of the required topical areas are addressed by WESKEMs Conduct of Operations Program. 3. The SBDs state requirements regarding the USQD Program. The USQD Program is tasked to ensure that changes regarding facility operations are adequately reviewed and to ensure that appropriate actions are implemented. It was determined that changes to the facility operations were implemented without USQD coverage. 4. The SBDs state a requirement regarding inventory control. The database used for inventory control, DOT-CALC, is not a validated/verified system. Formal procedures for use of this system do not exist. A corrective action, ICATS number 3977, already exists to address this issue. 5. The SBDs provide a TSR requirements regarding the particulate size for LLW waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for the waste generator. <p>Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "Violation of Technical</p>	<ol style="list-style-type: none"> 1. The SBDs have requirements that are not adequately addressed in the operating procedures. 2. The SBDs have requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active. 3. The SBDs have requirements regarding the Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement. 4. The SBDs have requirements regarding document control through a records management center. The interface between EMEF Document Management Center and the WESKEM Document Center needs to be formally defined. 5. The SBDs have requirements regarding evacuation drills. It appears that BJC procedures regarding evacuation drills have been cancelled without replacement. 6. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents. 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p><i>Safety Requirement Concerning Particulate Inventory Control."</i></p>			
<p>Transuranic Waste Storage Facilities 7826 & 7834 Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The SBDs state requirements regarding the limits for liquid hazardous waste stored at the facility. It was determined that the operating procedures do not adequately define/clarify these limits consistent with the Safety Basis Document(s). 2. The SBDs state that eighteen topical areas are addressed by the Conduct of Operations Program; however, it was determined that only eleven of the required topical areas are addressed by WESKEMs Conduct of Operations Program. 3. The SBDs state a requirement regarding inventory control. The database used for inventory control, DOT-CALC, is not a validated/verified system. Formal procedures for use of this system do not exist. A corrective action, ICATS number 3977, already exists to address this issue. 4. The SBDs provide requirements regarding storage volume limits. It was determined that the SBD citations for storage volume limits are self-inconsistent and are also inconsistent with the waste acceptance criteria defined in operating procedures. 5. The SBDs provide a TSR requirements regarding the particulate size for LLW waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for the waste generator. <p>Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "<i>Violation of Technical Safety Requirement Concerning Particulate Inventory Control."</i></p> <ol style="list-style-type: none"> 6. The SBDs state requirements regarding the USQD Program. The USQD Program is tasked to ensure that changes regarding facility operations are adequately reviewed and to ensure that 	<ol style="list-style-type: none"> 1. The SBDs have requirements that are not adequately addressed in the operating procedures. 2. The SBDs have requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active. 3. The SBDs have requirements regarding the Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement. 4. The SBDs have requirements regarding document control through a records management center. The interface between EMEF Document Management Center and the WESKEM Document Center needs to be formally defined. 5. The SBDs have requirements regarding storage of RCRA waste at the facility. SBD language regarding RCRA storage implies that storage of RCRA waste is permissible; however, it is not permissible per the RCRA permit. 6. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents. 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

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Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p>appropriate actions are implemented. It was determined that changes to the facility operations were implemented without USQD coverage.</p>			
<p>Remote Handled TRU Waste Storage Bunker 7833 Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The SBDs state requirements regarding the limits for liquid hazardous waste stored at the facility. It was determined that the operating procedures do not adequately define/clarify these limits consistent with the Safety Basis Document(s). 2. The SBDs state that eighteen topical areas are addressed by the Conduct of Operations Program; however, it was determined that only eleven of the required topical areas are addressed by WESKEMs Conduct of Operations Program. 3. The SBDs state a requirement regarding the USQD Program. The USQD Program is tasked to ensure that changes regarding organizational structures and responsibilities are adequately reviewed and to ensure that appropriate actions are implemented. It was determined that changes to organizational structures and responsibilities were implemented without USQD coverage. 4. The SBDs provide requirements regarding storage volume limits. It was determined that the SBD citations regarding storage volume limits are self-inconsistent and are also inconsistent with the waste acceptance criteria defined in operating procedures. 5. The SBDs provide a TSR requirement regarding the particulate size for TRU waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for waste received from the waste generator. <p>Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "Violation of Technical Safety Requirement Concerning Particulate Inventory Control."</p>	<ol style="list-style-type: none"> 1. The SBDs have requirements that are not adequately addressed in the operating procedures. 2. The SBDs have requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active. 3. NCSE requirements address the amounts of liquid waste that may be stored at the facility. These NCSE requirements are less restrictive than the SBDs. 4. An NCSE requirement addresses the storage of waste in an above ground facility; however, the 7883 facility is described as 85% below grade. This is a contradiction within the NCSE. 5. An SBD has a requirement regarding changes that must be implemented for the next SAR update. The SAR has not been updated annually as required, and the items identified in the SBD have not been incorporated. 6. The SBDs identify the need for a Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement. 7. The SBDs have requirements regarding evacuation drills. It appears that BJC procedures regarding evacuation drills have been cancelled without replacement. 8. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents. 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p>6. The SBDs state a requirement regarding inventory control. The database used for inventory control, DOT-CALC, is not a validated/verified system. Formal procedures for use of this system do not exist. A corrective action, ICATS number 3977, already exists to address this issue.</p>	<p>9. The SBDs have requirements regarding document control through a records management center. The interface between EMEF Document Management Center and the WESKEM Document Center needs to be formally defined.</p>		
<p>Remote Handled TRU Waste Storage Facility 7855 Mike West/Waste Disposition</p>	<p>1. The SBDs state requirements regarding the limits for liquid hazardous waste stored at the facility. It was determined that the operating procedures do not adequately define/clarify these limits consistent with the Safety Basis Document(s).</p> <p>2. The SBDs state that eighteen topical areas are addressed by the Conduct of Operations Program; however, it was determined that only eleven of the required topical areas are addressed by WESKEMs Conduct of Operations Program.</p> <p>3. The SBDs state a requirement regarding the USQD Program. The USQD Program is tasked to ensure that changes regarding organizational structures and responsibilities are adequately reviewed and to ensure that appropriate actions are implemented. It was determined that changes to organizational structures and responsibilities were implemented without USQD coverage.</p> <p>4. The SBDs state a requirement regarding inventory control. The database used for inventory control, DOT-CALC, is not a validated/verified system. Formal procedures for use of this system do not exist. A corrective action, ICATS number 3977, already exists to address this issue.</p> <p>5. The SBDs provide a TSR requirement regarding the particulate size for TRU waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for waste received from the waste</p>	<p>1. The SBDs have requirements that are not adequately addressed in the operating procedures.</p> <p>2. The SBDs have requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active.</p> <p>3. The SBDs identify the need for a Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement.</p> <p>4. The SBDs have requirements that state that programmatic controls shall be in place to ensure that procedures are kept current as conditions change. The management assessment revealed that some operating procedures are out-of-date.</p> <p>5. The SBDs have requirements regarding document control through a records management center. The interface between EMEF Document Management Center and the WESKEM Document Center needs to be formally defined.</p> <p>6. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents.</p>	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
	<p style="text-align: center;">generator. Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "<i>Violation of Technical Safety Requirement Concerning Particulate Inventory Control.</i>"</p>			
<p>Solid Waste Compactor Facility 7831 Mike West/Waste Disposition</p>	<ol style="list-style-type: none"> 1. The SBDs state requirements regarding the limits for liquid hazardous waste stored at the facility. It was determined that the operating procedures do not adequately define/clarify these limits consistent with the Safety Basis Document(s). 2. The SBDs state that eighteen topical areas are addressed by the Conduct of Operations Program to ensure safe operation of the facility; however, it was determined that only eleven of the required topical areas are addressed by WESKEMs Conduct of Operations Program. 3. The SBDs provide requirements regarding storage volume limits. It was determined that the SBD citations for storage volume limits are self-inconsistent and are also inconsistent with the waste acceptance criteria defined in operating procedures. 4. The SBDs provide a TSR requirement regarding the particulate size for TRU waste materials. It was determined that the necessary programs and/or procedures are not in place to adequately regulate particle size limits (less than 10 micrometers) for the waste generator. <p style="text-align: center;">Addressed in occurrence report ORO—BJC-X10WSTEMRA-2002-0001, "<i>Violation of Technical Safety Requirement Concerning Particulate Inventory Control.</i>"</p> <ol style="list-style-type: none"> 5. The SBDs state a requirement regarding inventory control. The database used for inventory control, DOT-CALC, is not a validated/verified system. Formal procedures for use of this system do not exist. A corrective action, ICATS number 3977, already exists to address this issue. 	<ol style="list-style-type: none"> 1. The SBDS have requirements that are not adequately addressed in the operating procedures. 2. The SBDs have requirements that either identify an obsolete organizational citation and/or cite a reference document that is no longer active. 3. A review of the SBDs against the operating procedures revealed that [1] some of the operating procedures do not adequately reflect the current facility status or [2] that the procedures should be updated. 4. The SBDs identify a need for a Configuration Management Program. The management assessment concluded that the Configuration Management Program needs improvement. 5. An SBD has requirements regarding the next update to the TSR. The TSR has not been updated annually as required, and therefore the specific changes identified in the SBD have not been incorporated. 6. The SBDs have requirements regarding evacuation drills. It appears that BJC procedures regarding evacuation drills have been cancelled without replacement. 7. The SBDs have requirements regarding control of documents through a records management center. The interface between EMEF Document Management Center and the WESKEM Document Center needs to be formally defined. 8. The SBDs have requirements regarding facility operations. Discontinued operations are not 	<p>None Recommended</p>	<p>The review indicated that there were no significant questions or concerns with operational safety.</p>

SB Flowdown Summary

Facility/MOP	Findings	Observations	Compensatory Measures	Overall Safety Assessment
		<p>reflected in the SAR or via the USQD process.</p> <p>9. Part of this assessment included questions from the BJC Management Assessment Checklist and Report. Item 10 on page 7 deals with reading and understanding the SB documents for the facilities. Required reading and associated records were not in place for the facility SB documents.</p>		

Enclosure 4
Safety Basis Flowdown Assessment Plan

H. Min Feb 15, 2002
Tom Leiker

**Bechtel Jacobs Company
Safety Basis Process
Performance Monitoring Report**

TYPE: Management Assessment

TITLE: Implementation of the BJC Safety Basis Process, Revision 1
November 26, 2001

NUMBER: ECS/NS-02-01 (02 = FY 2002)

ORGANIZATION: BJC Projects and the Nuclear Safety / Nuclear Criticality
Safety Organization

LOCATION: All Sites

DATES: October 31, 2001, through February 11, 2002

PROJECT NUMBER: Engineering & Construction Services

PERFORMED BY:

PURPOSE: To assess the implementation of the Bechtel Jacobs Company (BJC) Safety Basis (SB) process. This assessment will be a field review of the SB requirements, facility categorization, flow down of SB requirements to procedures, knowledge of facility management responsible for maintaining operations in accordance with SB controls, and document management of SB related documents.

RESULTS SUMMARY:

Bechtel Jacobs Company
Safety Basis Process
Performance Monitoring Report

TYPE: Management Assessment

TITLE: Implementation of the BJC Safety Basis Process, Revision 1

NUMBER: ECS/NS-02-01 (02 = FY 2002)

ORGANIZATION: BJC Projects and the Nuclear Safety / Nuclear Criticality Safety Organization

LOCATION: All Sites

DATES: October 31, 2001, through February 11, 2002

PROJECT NUMBER: Engineering & Construction Services

PERFORMED BY: See attached list of assessors *K. M. M. Term Leader Feb 15, 2002*

PURPOSE: To assess the implementation of the Bechtel Jacobs Company (BJC) Safety Basis (SB) process. This assessment will be a field review of the SB requirements, facility categorization, flow down of SB requirements to procedures, knowledge of facility management responsible for maintaining operations in accordance with SB controls, and management of SB related documents.

ASSESSMENT SUMMARY:

This Management Assessment report is a summary of the results of separate assessments performed for each BJC category 2 and 3 nuclear facility to assess the flowdown and effective implementation of safety basis requirements. The Safety Basis Flowdown Assessments were performed as a corrective action associated with BJC Occurrence Report ORO--BJC-Y12WASTE-2001-0010 and associated NTS Report NTS-ORO-BJC-BJCPM-2001-0004. Separate facility level assessment reports have been placed into the BJC Document Management Center and a file copy is maintained by the Nuclear Safety Organization.

1.0 Scope

- The scope of this assessment includes all BJC nuclear category 2 and 3 and radiological facilities. It will be organized by site and project and include BJC self-performed work as well as subcontractors. An implementation plan has been developed and submitted to DOE for approval to bring the SB documents into compliance with 10CFR830 Subpart B by April 2003. This assessment will include a review of hazard categorization and documentation, flow down of SB requirements to procedures, field implementation of requirements, and knowledge of facility management responsible for maintaining operations in accordance with SB controls.

The scope includes:

- Facility hazard classification of Nuclear Category 2, 3 facilities
- Flow down of safety basis requirements – Nuclear Category 2 and 3 facilities
- Field implementation of SB related requirements – Nuclear Category 2 and 3 facilities
- Knowledge, training, and qualifications of appropriate managers, supervisors, and operators – Nuclear Category 2 and 3 facilities
- Flow down of requirements to subcontractors – Nuclear Category 2 and 3 facilities

Specific lines of inquiry are contained in attachment 1.

Some facilities have completed or begun reviews of the areas to include in this assessment. Where recent reviews have been completed, a spot check of the adequacy of the facility review will be sufficient. The use of spot checks rather than completion of a completed attachment 1 requires team leader concurrence.

2.0 Relevant Procedures

- PQ-A-1420; *Management Assessment*
- BJC-NS-1010; *Nuclear Safety/Nuclear Criticality Safety Program Assessment Plan*
- BJC-NS-1002, *Safety Documentation for Nuclear Category 2 & 3 Facilities*
- BJC-NS-1009, *Safety Documentation for Facilities With Hazards Less Than Nuclear Category 3*
- DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*

3.0 Assessment Teams

There will be several two-person teams depending on personnel availability. BJC personnel will not assess areas for which they have responsibility. The teams will be formed from the following personnel:

Ken Mero, BJC Team Lead
Alvin Gwathney, BJC
Dave Reed, BJC
Joe Little, BJC
Joe McNeeley, BJC
Chris Caldwell, SAIC
Tim Floyd, SAIC
Tom Dahl, TetraTech
Carl Pilj, DOE ORO
Lonnie Brock, DOE ORO
Dennis Myers, PWT
Charlie Griffiths, PWT
Doan Falconer, Parallax
Brian Debs, Parallax
Paul Kellog, Parallax

4.0 Schedule

The schedule will be developed based on availability of team members and will attempt to minimize the effects on facility operations.

The priority of facilities for assessment

1. Nuclear Category 2
2. Nuclear Category 3
3. Radiological Facilities

5.0 Results

Attachment 1 will be completed for each facility assessed. The significant results of the assessment will be highlighted using attachment 2. Attachments 1 and 2 will be provided to the MOPs when they are completed.

ATTACHMENT 1

Management Assessment Checklists and Reports

MANAGEMENT ASSESSMENT CHECKLIST AND REPORT

Project Title: _____ Facility: _____

Assessed Area: **Facility Hazard Classification of Nuclear Category 2, 3 and Radiological Facilities**

Assessment Team Members: _____

Project personnel interviewed: _____

References:

Checklist:		Results:		
Item No.	Criteria	OK	No	Remarks/ Conditions Found
1.	Does Preliminary Hazard Screening (PHS) exist? See BJC-NS-1002 or BJC-NS-1009.			
2.	Does Hazard Identification and Facility Classification (HIFC) form exist?			
3.	Is the HIFC approved by DOE?			
If the facility had an initial classification of Cat 2 and was downgraded to Cat 3, or Cat 3 to Radiological, or Rad to non-radiological, check the following (otherwise, mark "NA"):				
4.	Does supporting analysis exist for the downgrading?			
5.	Has the analysis supporting the categorization downgrade been approved by DOE?			
For each Cat 2 & 3 & Radiological facility:				
6.	Does characterization information (e.g. rad surveys, chemical analyses, inventories, etc) exist for current conditions?			
7.	Does the characterization information support the facility's categorization?			
For each Cat 2 & 3 nuclear facility provide a list of current DOE-approved authorization basis documents including:				
8.	Nuclear Safety (DSA, SAR, BIO, ASA, TSR, OSR, SER, etc.)			
9.	Non-nuclear Safety (HASPs, hazard surveys, hazard assessments, emergency action levels, etc.			
10.	DOE approvals of changes from positive Unreviewed Safety Questions (USQs).			
11.	Is the SB list consistent with the Authorization Agreement for the facility? (if an AA exists)			
12.	For each item above that cannot be met, is there a corrective action plan, schedule, & available funding?			
For Radiological facilities:				
13.	Provide a list of any documents affecting categorization: USQDs, NCSEs, NCSDs, other.			

Submitted: _____ Date: _____ Approved By: _____ Date: _____
Team Member Assessment Team Leader

MANAGEMENT ASSESSMENT CHECKLIST AND REPORT

Project Title: _____ Facility: _____

Assessed Area: **Flow Down of Authorization Basis Requirements to Procedures**

Assessment Team Members: _____

Project personnel interviewed: _____

References:

Checklist:		Results:		
Item No.	Criteria	OK	No	Remarks/ Conditions Found
1.	Have surveillance procedures been developed and approved that incorporate clearly defined acceptance criteria from TSR/OSR requirements?			
2.	Do surveillance procedures required by TSRs/OSRs ensure compliance within the necessary periodicity?			
3.	Have administrative controls been established to ensure compliance with applicable TSR/OSR limiting conditions of operation (LCO) action statements?			
4.	Have the initial testing, in-service surveillance and maintenance requirements to ensure integrity of design features for safety (DFS) been identified & performed satisfactorily and within required periodicity?			
5.	Are hazardous material inventories maintained within the allowable limits established in the SB documents?			
6.	Have USQD screenings or USQDs been completed for all changes to the facility, SB documents, operations, activities, or procedures?			
7.	Do all commitments, assumptions & other req'ments (statements that begin with will, shall, must, all, etc.) in the SB documents flow down to procedures that ensure that the req'ments are met by facility activities? Note: Many of these items will not begin with will shall, must, etc. and may be buried in the analysis sections.			
8.	Do commitments, assumptions, & other requirements from technical/design documents referenced in the SB flow into the SB documents or implementing documents?			
9.	Are facility SB documents and Authorization Agreements developed, maintained current, and utilized.			

	NOTE: Annual updates to SARS and other SB documents have not always been submitted to DOE. In such cases USQDs prepared since the last update should be reviewed to ensure that any commitments, assumptions & other req'ments are included in flow down reviews?			
10.	Are structures, systems & components (SSCs) important to safety described in SB documents included in a configuration management process?			
11.	Prepare a crosswalk of SB req'ments to implementing procedures to verify that the SB req'ments are fully implemented.			
12.	Are all SB documents accurate, effective, controlled, and available in the DMC?			

Submitted: _____ Date: _____ Approved By: _____ Date: _____
 Team Member Assessment Team Leader

MANAGEMENT ASSESSMENT CHECKLIST AND REPORT

Project Title: _____ Facility: _____

Assessed Area: **Field Implementation of SB-related Requirements**

Assessment Team Members: _____

Project personnel interviewed: _____

References:

Checklist:		Results:		
Item No.	Criteria	OK	No	Remarks/ Conditions Found
1.	Does the facility and its operations match the SB documents? Note: This will require a walkdown of the facility .			
2.	Are approved and controlled procedures and other work instructions used in performing operations?			
3.	Are approved and controlled procedures and other work instructions used in performing required surveillances?			
4.	Does the facility/operations manager control & approve commencement of operations and other new activities?			
5.	Are the safety management programs specified in the SB documents properly implemented in the field?			

Submitted: _____ Date: _____ Approved By: _____ Date: _____
Team Member Assessment Team Leader

MANAGEMENT ASSESSMENT CHECKLIST AND REPORT

Project Title: _____ Facility: _____

Assessed Area: **Knowledge, Training, and Qualifications of Appropriate Managers, Supervisors, and Operators**

Assessment Team Members: _____

Project personnel interviewed: _____

References:

Checklist:		Results:		
Item No.	Criteria	OK	No	Remarks/ Conditions Found
The following are a minimum set of questions that project managers, facility managers, and/or facility operators should be able to answer concerning the facility AB documents and flow down requirements:				
1.	What are the facility SB documents for operation of the facility? N/A for Operators. They should know that they are to work from procedures.			
2.	Where can a copy of the SB documents be obtained or reviewed? N/A for operators. They should know to work from current approved procedures.			
3.	What are the worst accidents and initiating events that could occur at the facility as discussed in the SB documents?			
4.	Describe the controls to prevent or mitigate (minimize the severity) the accidents described in the SB documents, including both engineered & administrative controls.			
5.	Will surveillances, tests, routine checks, &/or maintenance activities required on facility SSCs ensure that features that prevent or mitigate accidents function as required?			
6.	What types & quantities of nuclear materials are present in the facility? How much is allowed in the facility?			
7.	What controls are in place to ensure that the types and amounts of allowable nuclear materials are not exceeded?			
Training and Qualification:				
8.	Are training & qualification req'ments defined for staff & line management involved in managing the nuclear facilities & in developing, maintaining, and implementation of SB documents?			
9.	Are training and qualifications and training records complete and current?			
10.	Have line management and staff read and understood the SB documents for their facilities and do the training records reflect completion of training?			

Approved By: _____ Date: _____

Assessment Team Leader

MANAGEMENT ASSESSMENT CHECKLIST AND REPORT

Project Title: _____ Facility: _____

Assessed Area: **Flow Down of Requirements to Subcontractors**

Assessment Team Members: _____

Project personnel interviewed: _____

References:

Checklist:		Results:		
Item No.	Criteria	OK	No	Remarks/ Conditions Found
1.	For facilities where work is performed by subcontractors, are the subcontractor's roles and responsibilities for developing, maintaining, & implementing SB requirements well defined? Are these roles and responsibilities imposed by the subcontract?			
2.	Does the subcontract describe or does a process exist which describes which SB documents are applicable for the facilities operated by the subcontractor?			

Submitted: _____ Date: _____ Approved By: _____ Date: _____
Team Member Assessment Team Leader

ATTACHMENT 2

SAFETY BASIS REVIEW

Facility _____ Nuclear Category _____

_____ was reviewed as part of an assessment of all nuclear category 2 and 3 facilities. The assessment was identified as a corrective action for the NTS report, NTS-ORO-BJC-BJC-PM-2001-0004. Technical adequacy of the SB documents did not include a detailed review of calculations, but did include a review to ensure assumptions made in the SB documents remain valid.

The following areas were reviewed:

- Facility hazard classification of nuclear category 2, 3 and radiological facilities;
- Flow down of SB requirements to procedures;
- Field implementation of SB-related requirements;
- Knowledge, training, and qualification of facility management responsible for maintaining operations in accordance with SB controls;
- Flow down of requirements to subcontractors.

The detailed results of the review are included in the attached checklists.

The assessment team will make a statement the either the review indicated that the facility categorization was correct and documentation existed to support the categorization or the facility categorization was not correct or sufficient documentation did not exist to support the categorization.

The assessment team will make a statement that the review indicated that there were no significant questions or concerns with operational safety or list the questions or concerns with operational safety.

The following are the opportunities for improvement identified during the review:

1. USQDs, if required
2. Compensatory measures recommended, if applicable
3. Items to consider in development of rule compliant DSA.

Additional Comments:

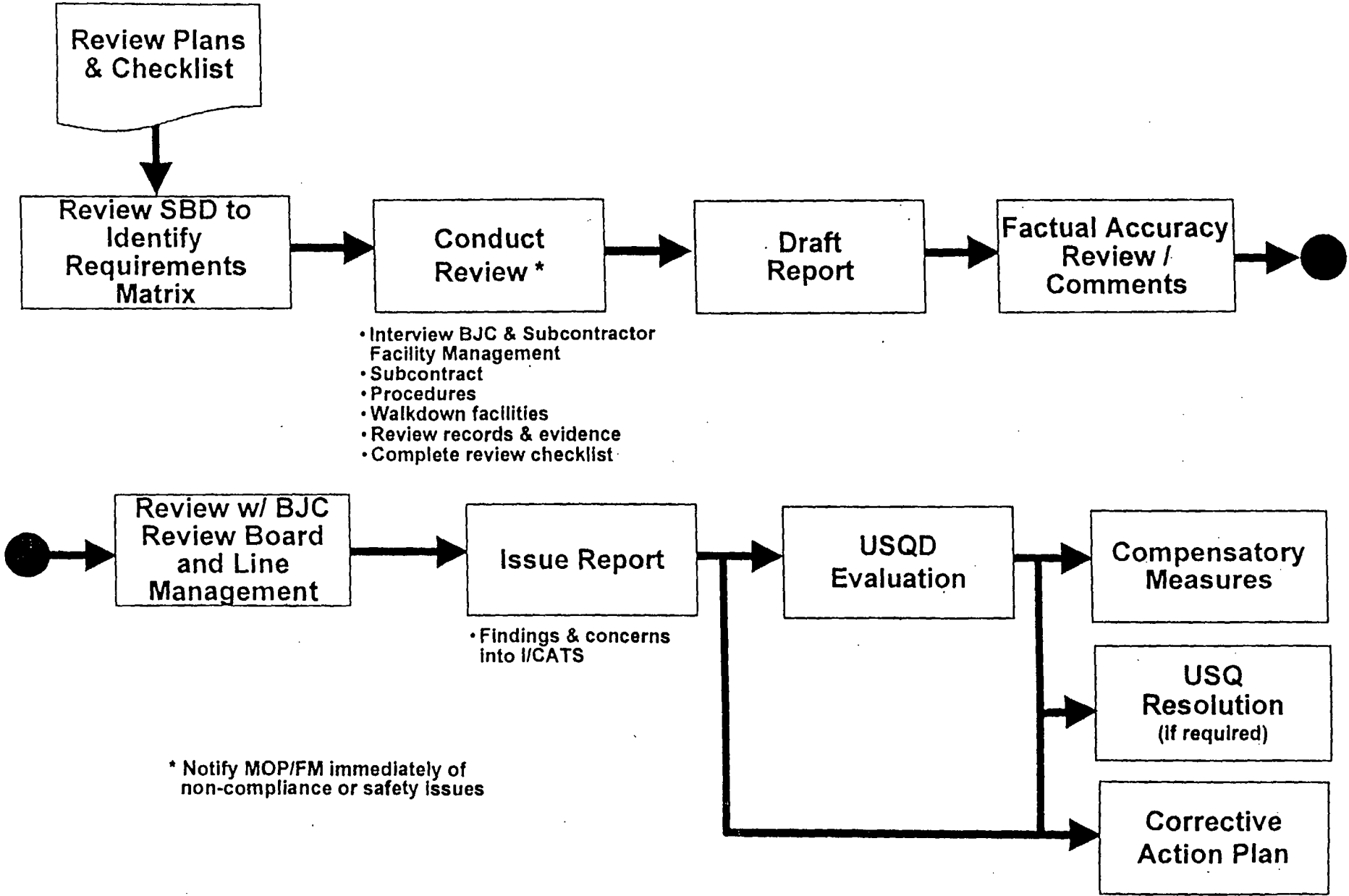
Reviewer/date: _____ Reviewer/date: _____

Team Leader/date: _____

Enclosure 5
Flowchart of Safety Basis Assessment Process

L. M. Feb 15, 2002
T. L. R.

Safety Basis Flowdown Implementation Review



Enclosure 6

Criteria for Selection of Assessors and List of Assessors

K. Maw Feb 15, 2002
Team 1, 2, 3

Criteria for Review and Acceptance of Assessor Qualifications

1. Independence from the facility, operations, and/or activity being assessed.
2. Extensive experience in the nuclear industry, i.e., DOE, commercial nuclear power, naval nuclear power.
3. Extensive experience performing inspections at commercial nuclear reactor facilities or performing assessments at DOE nuclear facilities.

Assessors participating in the reviews:

All Facilities Except Waste Disposition

Mero – BJC Nuclear Safety Manager – Over 30 years nuclear experience in both DOE and naval nuclear power operations. Qualified as a lead auditor.

Little – BJC Nuclear Safety Lead – Over 35 years experience preparing safety documents for ERMW projects and commercial nuclear power plants.

Gwathney – BJC Nuclear/Facility Safety Technical Lead for Waste Disposition and Waste Operations. Over 20 years nuclear experience including over five years in the nuclear/facility safety position.

McNeeley – BJC Nuclear/Facility Technical Lead for ETTP Depleted Uranium Cylinder Yards. Over 14 years experience working with DOE isotope enrichment technologies.

Caldwell – Consultant - Over 20 years experience in commercial, naval nuclear power, and DOE nuclear facilities. Over nine years experience as a NRC Senior Resident Inspector at a commercial reactor site.

Dahl – Consultant - Over 30 years experience as a project manager and nuclear system operations manager in DOE and naval nuclear power operations.

Debs - Consultant – Over 30 years experience in the DOE nuclear complex, commercial nuclear industry, and naval nuclear power program including an inspector for the Nuclear Regulatory Commission.

Falconer – Consultant – Over 20 years nuclear facility experience including Resident Inspector and Operator License Examiner for the Nuclear Regulatory Commission.

Floyd – Consultant – Over 20 years nuclear industry experience including lead licensing engineer for two commercial plants.

Griffith – Consultant – Over 25 years nuclear industry experience including management advisor to DOE Facility Managers for restart of DOE nuclear facilities.

Kellogg – Consultant – Over 30 years nuclear industry experience including NRC experience directing routine and non-routine inspection activities at commercial plants.

Myers – Consultant – Over 25 years nuclear industry experience including over five years as NRC Senior Resident Inspector and inspector at a commercial plant.

Waste Disposition Facility Reviews

Benson – Consultant – Over 15 years nuclear experience including Senior Reactor Operator Certification.

Carty – Consultant – Over 15 years DOE complex experience including project management and lead engineering roles – Licensed PE.

Dahl – Consultant – Over 30 years experience as a project manager and nuclear systems operations manager in DOE and naval nuclear power operations.

Ellis – Consultant – Over 20 years nuclear experience including project management experience at DOE nuclear facilities.

Kucsmas – Consultant – Over 20 years DOE experience including performing technical reviews.

Thiesen – Consultant – Over 10 years DOE experience including calculations and risk assessments to meet safety analysis requirements.

Wayland – Consultant – Over 40 years nuclear experience including 35 years in the DOE complex. Licensed PE.

Willingham – Consultant – Over 25 years DOE experience including maintenance of SB documents and preparation of USQDs.

Enclosure 7

Safety Basis Review Board Charter

B. Mun : Feb 15, 2002
Team leader



OWNER: General Management	BJC-GM-211	REV. NO. 2
SUBJECT AREA: Safety	EFFECTIVE DATE: 12/19/01	Page 1 of 2
DOC TYPE: Charter	PREPARER/POC: Bruce Wilson	
TITLE: SAFETY BASIS REVIEW BOARD	APPROVED BY/DATE: John Lyons 12/19/01 [Approval Signature on File]	

MISSION AND SCOPE

In the Corrective Action Plan for Noncompliance Tracking System (NTS) report, NTS-ORO—BJC-BJCPM-2001-0004, *Inadequacy in Safety Authorization Basis Management*, action five (5), Bechtel Jacobs Company LLC (BJC), committed to the following corrective action: "Conduct review of AB [Authorization Basis] documents for all category 2 and 3 nuclear facilities to assess flowdown of requirements into subcontracts and implementing documents, technical adequacy of AB documents, knowledge and understanding of BJC and subcontractor staff, and implement compensatory measures if needed."

The BJC Nuclear Facility Safety Manager is responsible for implementation of this corrective action. The Safety Basis (SB) Review Board is established to oversee implementation of this corrective action and associated findings. As an initial task the Board is responsible for reviewing the results of the SB Flow Down Assessment for each facility in response to the NTS corrective action. The Board will also review the results of assessments of facilities for radiological categorization.

This Board will have ongoing responsibility for: reviewing AB documents; reviewing AB document updates or revisions; reviewing resolution of Department of Energy (DOE) comments on AB documents; reviewing adequacy of corrective actions associated with DOE Oak Ridge Operations (ORO) or DOE Headquarters (HQ) AB document assessments; and reviewing plans for resumption of suspended or shutdown activities in category 2 and 3 nuclear facilities.

ROLES

The Board will review the SB Flow Down Assessment reports and receive a debriefing of the assessment results along with the responsible Manager of Projects (MOP) for the facility. If questions arise over interpretation of SB document requirements, the Board will provide guidance to the assessment teams and/or the MOPs as to proper interpretation and actions to take, and will have the final authority for these interpretations.

The Board will either concur or not concur with the assessment teams' recommendations as to whether the assessment indicated there were no significant questions or concerns with operational safety and whether the assessment indicated that the facility categorization was correct, documentation existed to support the identification and implementation of safety basis related controls and the materials supporting the management of the change process.

OWNER: General Management	BJC-GM-211
TITLE: SAFETY BASIS REVIEW BOARD	REV. NO. 2
	Page 2 of 2

The Board will determine the appropriateness of the compensatory measures recommended by the SB Flow Down Assessment teams. The Board will also concur with any corrective action plans or corrective actions required as a result of the assessments.

The Board will review AB documents and AB document updates or revisions and receive a briefing of the documents along with the responsible MOP for the facility. The Board will also review resolution of DOE comments on AB documents and any corrective actions arising from DOE ORO or DOE HQ AB assessments. If questions arise over interpretation of SB document requirements, the Board will provide guidance to the MOPs as to proper interpretation and actions to take, and will have the final authority for these interpretations. The Board will recommend approval to the General Manager who will submit the appropriate documents to DOE when required.

The Board will review resumption or restart plans for the facility and receive a briefing on the plans along with the responsible MOP. If questions arise over interpretation of SB document requirements, the Board will provide guidance to the MOPs as to proper interpretation and actions to take, and will have the final authority for these interpretations. The Board will recommend approval to the General Manager who will submit the appropriate documents to DOE when required.

RESPONSIBILITIES

The SB Review Board will be comprised of the following:

- John Lyons, Deputy General Manager for Safety Systems Integration; Chairman
- Jimmy Massey, Manager of Projects for Safety Systems Integration, alternate Chairman
- Mike Hitchler, Nuclear Safety Technical Advisor
- Bruce Wilson, Nuclear Facility Safety Manager

A quorum will consist of 3 of 4 of the board members.

REVISION LOG		
Revision Number	Description Of Changes	Pages Affected
0	Initial Release	All
1	Non-intent change. Changed responsibilities for Chairman and added Alternate Chairman.	2
2	Intent change. Title change. Added responsibilities: to review assessments of facilities for radiological characterization; to review AB documents and revisions; to review resolution of DOE comments on AB documents; to review adequacy of corrective actions from DOE AB document assessments; and to review plans for resumption of suspended or shutdown activities in Cat 2 or Cat 3 facilities. Added alternate chairman.	All

Letter to Lori Fritz from Paul Clay (GM-02-0013, dated 3/4/02)
Subject: Actions to Determine Safety of Ongoing Bechtel Jacobs Company LLC, Environmental
Management Operations

Attachment 2

Bechtel Jacobs Company LLC

Safety Basis Technical Adequacy Assessment

March 1, 2002

DNF SAFETY BOARD

02 MAR 18 AM 9:38

RECEIVED



Interoffice Memorandum

To Gil Drexel
Gordon Dover
Greg Eidam
Charlie Frye
M'balia Tagoe

File No. IOM-GM-02-12

Subject Safety Basis Technical Adequacy
Assessment Required Actions

Date March 1, 2002

From Paul F. Clay *P.F. Clay*

Of Vice President and General Manager

Copies To Cindy Daugherty
John Lyons
Steve Houser
Jimmy Massey
Andy Phelps
Bruce Wilson
File: EMEF DMC -RC

At K1225 Ext 241-1188

DOE and BJC recently completed a Joint Safety Basis Technical Adequacy Assessment. A copy of the report is attached. In the assessment report, the team recommended several compensatory measures and a number of actions requiring further analysis. Consistent with discussions with your staff, the following compensatory measures and actions are to be implemented as stated:

FACILITY COMPENSATORY MEASURES

- CM1. **Radioactive Solid Waste Storage Facilities, Buildings 7823B, C, and D** - Suspend radionuclide inventory increases pending (1) definition of inventory limits based on the consolidation of B, C, and D as one facility (remove segmentation assumption) and (2) analysis of large fire initiated releases (broader than current safety basis assumptions). (Frye)
- CM2. **High-Level Radiation Analytical Facility, Building 3019B** - Place the east wall under configuration management as a passive design feature. (Eidam)

These compensatory measures are to be implemented immediately, and are to remain in effect until authorized by myself or resolved via DOE approved safety basis documents. Please provide written confirmation of implementation by COB Wednesday, March 6th.

Additionally, we are recommending that DOE evaluate the need for the following compensatory measure:

- CM3. **UF₆ Cylinder Storage Yard, 1066-B** - Evaluate the need to suspend or limit train movements at ETP pending completion of USQD required under A6 below. (DOE)

FACILITY FURTHER ACTIONS

- A1. **Radioactive Solid Waste Storage Facilities, Buildings 7823E; 7831A and C; 7842B and C; 7878A; 7879; 7934; 7572 and 7574** - Reassess hazard categorization to verify current assumption relative to facility segmentation. Analyze releases associated with maximum credible fire (e.g., vehicle crashes and forest fires). (Frye)
- A2. **High-Level Radiation Analytical Facility, Building 3019B** - Assess the practicality of evacuation times following explosions. (Eidam)
- A3. **Low Level Liquid Waste System** - Train USQD reviewers on transfer line accidents, key assumptions, and special hazards associated with construction or maintenance of transfer systems. (Frye)
- A4. **Recycle and Assembly Building, X-7725** - Expedite EMHA of hazardous chemicals. (Drexel)
- A5. **Tower Shielding Facility, Building 7700A and B** - Evaluate accidents having a frequency $>10^{-2}$ per year using anticipated event consequence evaluation criteria to determine the need for controls. Verify that the pre-fire plan recognizes the presence of reactive materials. (Eidam)
- A6. **UF₆ Cylinder Storage Yard, 1066-B** - Perform a USQD to evaluate the effect of train accidents and resultant fires. (Tagoe)
- A7. **Low-Enriched Uranium (LEU) Process Building K-27** - Reassess hazardous material releases against each ERPG-2 threshold. (Tagoe)

These actions are to be addressed as a high priority in order to reduce the uncertainty associated with the technical adequacy of the associated safety basis documents. Please provide input by **Friday, March 15th** of your planned schedule for completion of each action.

Additional improvements are identified in the attached report. These are to be addressed as part of the 830 upgrade plan.

Should you have any further questions, please contact Mike Hitchler at 574-5884.

Enclosure: As stated

BECHTEL JACOBS MANAGEMENT ASSESSMENT REPORT
Based on the
JOINT DOE/BJC SAFETY BASIS TECHNICAL ADEQUACY REVIEW

DOE and BJC have developed a detailed program that is responsive to the issues raised in the DNFSB letter dated October 15, 2001. A key element of this program is activities assessing safety basis requirements and the flowdown of these requirements into facility operations. A DOE-Headquarters independent assessment, as well as, several BJC and DOE assessments has been completed. The BJC and DOE assessments identified required improvements. One action is to review the technical adequacy of the Safety Basis' hazards and accident analysis, which result in requirements (TSR/OSRs and Safety Management Program attributes). This report documents the results of a joint DOE and BJC team effort that reviewed a representative sample of nuclear facility Safety Basis.

PATICIPANTS

The review team was composed of eight individuals with backgrounds in safety basis documentation development, review and implementation. The team was composed of:

<u>DOE</u>	<u>BJC</u>
Jay Mullis	Mike Hitchler
Carl Everatt	Doug Heal
Jimmy Dyke	John Hoffmeister
Roger Casteel	Greg Swenson

The team was selected based on their familiarity with the development and review of BIO, SAR and JCO related hazard and accident analysis. The team was supported by engineering staff from each reviewed facility and by safety basis analytical staff for specialty areas.

REVIEW APPROACH

Task 1

Select a representative sample of facility Safety Bases for review. Sample selection criteria included:

- Operating- the facility is operating or has anticipated near term planned activities,
- Mission - Essential-key to meeting DOE goals or supporting other mission essential facilities.
- High Hazard/Risk Potential
- BJC Flowdown Review

The BJC Managers Of Projects (MOPs) provided data for all nuclear and radiological facilities. The data specified the operating status and missions for each facility. These are documented in *Bechtel Jacobs Management Assessment Nuclear Radiological Facility's Operating and Mission Status as Used by the Joint DOE/BJC Safety Basis Technical Adequacy Review (GM-02-0010)*. The team reviewed this data and selected fifteen nuclear and sixteen radiological facilities as candidates for technical review and DOE flowdown. These are listed in Table 1. Where a Project had several facilities (e.g. WDP, PORTS and PAD) with similar missions, SB approach and procedural flowdown, a single representative facility was selected. The DOE flowdown

review and walkdown are outside the scope of this document. All fifteen nuclear facilities' safety basis analysis and controls were reviewed.

Task 2

Collect the technical evaluations, judgements and analysis, which are used as the basis for inclusion or exclusion of facility controls. Each facility's Safety Basis and other supporting documentation was reviewed. Key information was extracted from these documents and used to complete a basic data review form. Key information was defined as dominant accidents, key assumptions, and explicit and implied controls and assessors actions. Key information and data sheets are documented in *Bechtel Jacobs Management Assessment Key Information Data Sheets as Used by the Joint DOE/BJC Safety Basis Technical Adequacy Review (GM-02-009)*.

Task 3

Assess the safety basis for completeness of the postulated accident list and technical adequacy of analysis. The team defined a minimum list of expected accidents applicable to these facilities, these included natural phenomena (seismic, wind and flood), fire/lightning, criticality, explosion (flammable gas and shock sensitive material) and material mishandling events. If events were missing from the SB the rationale was reviewed and an assessment was made for significance. If the event was significant, the team performed a limited consequence assessment. This consequence assessment was based on MACCS analysis for F at 1 m/sec and D at 4.5 m/sec stability classes and included elevated and ground level releases. Also a set of Dose Conversion Factors (DCFs) for all anticipated radionuclides resident at these facilities was specified. These are documented in *Bechtel Jacobs Management Assessment Radionuclide Transport and Dose Conversion Factor Data as Used by the Joint DOE/BJC Safety Basis Technical Adequacy Review (GM-02-0011)*. After defining the minimum accident set, the team reviewed this set's analysis for appropriate technical rigor and consistency with DOE guidance (e.g. DOE STD 3009, 3011, 1027 and HDBK 3010). As issues arose, the impact of more appropriate assumptions was assessed.

Task 4

Based on the teams revised dominant accident set, the current controls were assessed. The assessment checked that all key assumptions, which flowed from the analysis, were properly protected and that revised analysis would not result in new or alternate control requirements. Attachment I documents the Technical Adequacy Review results for each of the nuclear facilities listed in Table 1.

RESULTS AND CONCLUSIONS

In general, risk is dominated by earthquake and fire initiators, which result in material dispersal or criticality. All facilities have assessed these hazards and have developed controls protecting most key analytical assumptions. The SB identified controls have appropriately flowed down to procedures or OSR/TSRs. Procedures are consistent with key technical assumptions; however, in several areas these assumptions were not identifiable as requirements. Improvements are listed in Attachment I, these should be considered as part of the 830 upgrade program. There are several actions recommended.

Programmatic Recommendations

The review was complicated by the distributed and diffuse nature of the SBs and safety evaluations. This was caused by the lack of SB content and analytical guidance to

subcontractors, lack of annual updates, and very long DOE approval cycles for submittals. This condition made traceability of analysis assumptions to controls very difficult. BJC implementing guidelines for technical content and technical rigor should be developed prior to release of tasks associated with 830 upgrades. Recognizing that tasks have been released and that the SB upgrade program has near term milestones, an alternative is to utilize a SB Technical Review of all tasks by the NS SME prior to release of tasks.

Categorization of Cat. 3 facilities must be reassessed. DOE STD 1027 requirements defining rules for segmentation and inventory exclusion must be observed. Inventory exclusion concerns were identified in the SB Flowdown Review, however new segmentation concerns were identified. The radiological categorization review must include a review of prior segmentation.

A DOE O 420.1 Fire Protection Safety Management Program must be developed and implemented. A key assumption is that large fires are very infrequent and are of short duration. This implies that the FP SMP is assuring low combustible loading, up to date fire detection and suppression system maintenance/surveillance and pre-fire plans consistent with SB assumptions.

Facility Specific Recommendations

7823-B,C,D and E: Fires were assumed to progress slowly, involve 10% of the inventory in the each hour for a total of a two-hour fire. The most likely large fire would result from a vehicle crash with subsequent fuel and hydraulic line rupture or forest fires. These fires could engulf much more of the inventory containers (probably 100%) and would be fully developed over a 10-20 minute interval. The team was told that current inventories are very low (~1-3% of allowed inventories). This assures that current dose limits are met. An assessment of these events consolidating B, C and D as one facility should be performed prior to acceptance of increased inventories to assure that dose limits are met.

3019B: The east wall integrity following an explosion is essential in minimizing doses to 3019A personnel and should be designated a Design Feature.

3019B: For facility workers very short evacuation times are credited to maintain inhalation dose below 100 rem. An assessment of the practicality of these times and improved training or consideration of protective strategies should be performed.

LLLWS: The BIO lists tank failures and overfills as the dominant accidents. The team judged accidents, which result in transfer line breaks to be nearly as dominant. The frequency of these events is judged to be Unlikely (<10⁻³ per yr.) and have consequences of ~1 and 50 rem for public and worker (100m) receptors. These doses are dominated by inhalation rather than the ingestion pathways stated in the BIO. Although procedures provide general coverage, there has not been the same technical rigor applied to these accidents and resultant controls as applied to the tank failure and overfills scenarios. Transfer line accidents should be reanalyzed as part of the 830 upgrade program, specifically addressing maximum credible transfer inventories and break sizes, manual or operator spill termination times and the need for controls. USQD reviewers should be trained on the importance of transfer operations and the key assumptions which could challenge EGs.

X-7725: Potential radiological doses are minimal, however the facility is known to have significant inventories of hazardous materials. Team estimates of inventories and calculated

consequences show that there is the potential to approach ERPG 2 values for facility (100m) and co-located workers. Estimates of hazardous inventories and an EMHA type consequence assessment should be expedited.

7700-A,B: The BIO evaluation criteria for anticipated events is nonconservative with respect to DOE STD 3011. Evaluated all events having a frequency of 10^{-1} - 10^{-2} per year using anticipated consequence evaluation criteria.

7700-A,B: Verify that the ORNL Fire Department's pre-fire plan recognizes that reactive materials are present.

1066-B: Trains pass within 25 ft of the 1066-B yard. The SB assumes that large inventories of flammable material (< 75 gal), in particular liquids, are not present. Train accidents and transported hazards have not been reviewed in the SB. Perform a USQD to evaluate the effect of these conditions on SB fire initiators.

K-27: The hazardous material assessment used an average of all ERPG-2 thresholds as the acceptability criterion. This is non-conservative by as much as two orders of magnitude. Reassess current results against the ERPG-2 thresholds for all significant quantities of stored hazardous material.

The basis for the review was the current SB and as much additional material as could be assembled given time constraints. This information included SB technical supporting documentation, interviews with analysts and DSA upgrade documentation. Where unavailable, conservative judgments were made. As such, the recommendations could be updated, if additional information is available.

TABLE 1

SAFETY BASIS REVIEWS

NUCLEAR FACILITIES

Primary	Project	POC
7823 B, D, E	WDP (West)	Karen Balo
3019 B	ORNL (Eidam)	Sylvia Wright-Reeder
LLLW	WD (Frye)	Merle Lauterbach
Active Vaults K25	WDP (West)	Scott Loveless
744 G	PORTS (Drexel)	Ralph D'Antoni
7725	PORTS (Drexel)	Ralph D'Antoni
7745 R	PORTS (Drexel)	Ralph D'Antoni
326 DMSA	PORTS (Drexel)	Ralph D'Antoni
C 745	PAD (Dover)	Dick Veazey
C 746 Q	PAD (Dover)	Dickie Kuehn
Phase 2 DMSAs	PAD (Dover)	Ricky Keeling

SECONDARY PRIORITY

Primary	Project	POC
7700 A, B TSF	ORNL (Eidam)	Sylvia Wright-Reeder
1066 B, E, F, J, K, L	ETTP (Tagoe)	Halen Philpot
K25	ETTP (Tagoe)	Greg Huddleston
K27	ETTP (Tagoe)	Jay Frantz

RADIOLOGICAL FACILITIES

Primary	Project	POC
9401-5	UCOF (Frye)	Dave Whitehead George McRae
9623	CPCF (Frye)	Dave Whitehead George McRae
9624	ESF (Frye)	Dave Whitehead George McRae
9616-7	WETF (Frye)	Dave Whitehead George McRae
1419	CNF (Frye)	Pete Peterson Tommy Bowers
1407 ?	CNF (Frye)	Pete Peterson Tommy Bowers
1425	TSCA (Frye)	Pete Peterson Tommy Bowers
1435	TSCA (Frye)	Pete Peterson Tommy Bowers
752 A	PAD (Dover)	Dickie Kuehn

SECONDARY PRIORITY

Primary	Project	POC
C-410 or 420	PAD (Dover)	Dave Massey
753 A	PAD (Dover)	Dickie Kuehn
7456 G3, 4, 5	PAD (Dover)	Dick Veazey
746 x	PAD (Dover)	Dickie Kuehn
733	PAD (Dover)	Dickie Kuehn
1065	WDP (West)	Scott Loveless
5109	ORNL (Eidam)	Charlie Johnson

ATTACHMENT 1

**TECHNICAL ADEQUACY REVIEW RESULTS:
HAZARDS, CONSEQUENCES, AND CONTROLS ASSESSMENT**

Technical Adequacy of the Analysis and Controls for the Radioactive Solid Waste Storage Facilities; Building 7823B, C, D, E; 7831A; 7831C ; 7842; 7842B, C; 7878A; 7879; 7934; 7572; and 7574

Completeness and Technical Rigor

The analysis and controls described in the Safety Basis were reviewed for completeness and technical accuracy. Documents reviewed include the *Safety Analysis Report for the Radioactive Solid Waste Storage Facilities* (ORNL/WM-RSWOG/RSWSF/SAR/R0-1), *Recommended Effective Release Fractions for use in Calculating Revised Category 2 Threshold Quantities for ORNL WMRAD Facilities* (DAC AX2827-SSE-001), and *Calculation of DOE-STD-1027-92 Revised Cat 2 TQs* (DAC-AX2825-SSE-001). The Radioactive Solid Waste Storage Facilities (RSWSFR) are currently categorized as Hazard Category 3. Consideration of criticality events and the assumption of < 1% by weight particulates less than 10 micrometers within the waste may change the Hazard Categorization to 2, but this alone would not impact the adequacy of the controls.

The existing analysis considers a number of "bounding" accidents (handling accident, earthquake, high winds, fire, internal reactions, and confinement failure) for both radiological and chemical hazards. Analysis within the SAR states the risk from these accidents is below the DOE evaluation guidelines (Risk Bins 1, 2, and 4) for the public and co-located worker. The approach of analyzing bounding events was considered appropriate for the time period for which the documents were written. Future revisions will need to analyze the full spectrum of accidents, including smaller consequence, higher frequency events, worker safety issues, and chemical safety issues.

The methodology used in the safety basis considers most of the bounding accidents for the public (1000m) and co-located worker (644m). This analysis lacks much of the rigor associated with the current DOE Safety Basis requirements as mentioned previously. Movement of the co-located worker from 644 meters to 100 meters will result in a corresponding increase in the estimated consequences within the DSA upgrade. In addition, a review of the bounding fire found several of the assumptions to be non-conservative (only one facility impacted, 10% of the inventory involved, two hour release duration, etc.). Countering the non-conservative assumption were several overly conservative assumptions, primarily the facility inventory is several orders of magnitude less than the Hazard Category 2 limits in DOE-STD-1027. A bounding analysis considering actual inventory within the facility showed consequences below the evaluation guidelines. It should be noted that the facility inventory should be reevaluated before the inventory in the facilities is increased.

Identification of Controls

The existing SAR did not identify any SSC's since there were no Risk Category 5,6,7,8 or 9 accidents identified in the analysis. It did document a number of administrative controls that were credited in the hazard analysis.

Recommendation

The following are a list of required actions:

1. Evaluate a large pool fire associated with type 2, 3, and 4 waste
2. The SAR also covers facilities 7831A, 7831C, 7842, 7842B, C, 7878A, 7934, 752 and 7574. These facilities should be assessed for proper segmentation and vulnerability to pool fires.

The following items were addressed as part of the safety basis flowdown process. These will be resolved as part of the overall upgrade to the BJC Safety Basis.

3. Determine new Waste Acceptance Criteria (WAC) after removing the assumption of the <1% particulate limit.
4. Determine the appropriate Hazard Categorization of the facilities consistent with the guidelines in DOE-STD-1027. Determine an appropriate facility inventory limit based on the conclusion of these results.

Technical Adequacy of Controls for 3019B

Completeness and Technical Rigor

Accident analysis and controls described in JCO-OR-3019B-0001 were evaluated for completeness and technical adequacy. The 3019B building is currently in S&M mode and 3019A has active operations occurring. The primary hazards involve releases of radioactive material contained in ductwork (420 g Pu equivalent inhalation dose) and criticalities associated with water ingress of fissile material containing pipes and ducts (5-12 kg of U 235). Consequences are appropriately calculated for receptor locations: public(240 m), co-located(100 m and 3019A) and in-facility. The dominant accident initiators, scenarios developed, release mechanisms and analysis appear to be complete and adequate for defining controls. The technical rigor is appropriate. Specifically, RFs and ARFs are consistent with conservative DOE STD 3010 values, criticality calculations are referenced and performed using appropriate methods and initiating event frequencies are judged to be reasonable. The primary uncertainties have been specified and in general addressed. The highest uncertainty is associated with full characterization of the material within the ducts, especially that associated with quantities and location of fissile material.

Identification of Controls

Identified controls are primarily administrative. These focus on limiting building access and evacuation, work control involving areas with perchloric acid, fire protection, criticality, emergency management and maintenance. The control set is generally consistent with the hazards and accident analysis. Areas of concern involve a credited SSC and evacuation training for facility/subcontractor workers. The integrity of the 3019B east wall is assumed in the accident analysis and is key to assuring that 3019A personnel doses and injuries are minimized for explosion events. This wall is neither under configuration management nor periodic inspection. The accident analysis predicts that facility worker doses exceed 25 and 100 rem within 19 and 72 seconds respectively. This is very short relative to most evacuations. Either provide training for personnel performing activities in this building that identifies the need for rapid evacuation for anomalous conditions or, since the hazard is an inhalation dose, consider a respirator requirement for work in this area.

Potential compensatory actions recommended:

1. Designate the 3019B east wall as a credited Design Feature.
2. Provide specific training for all personnel performing work in the building on evacuation times associated with perchloric explosions or a respirator.

Technical Adequacy of Controls For Liquid Low Level Waste System

Completeness and Technical Rigor

The Liquid Low Level Waste System (LLLWS) was segmented for hazard categorization/classification purposes (HS/LLLW/F/1/R3) into buildings, tanks, transfer lines, and valve boxes with hazard categorization/classifications ranging from Nuclear Category 2/Low to Industrial/Industrial. Safety Basis (SB) documents for the LLLWS, including ORNL/WM-LGWO/LLLW/BIO/R1, HS/LLLW/F/1/R3, SSA/7966-WMRAD/SSE/R0, WM-LGWO-7856-SSA, WM-LGWO-7856-TSR, Rev. 3, WM-LGWO-2099-SSA, Rev. 1, WM-LGWO-7877-SAR, Rev. 1, WM-LGWO-7877-TSR, Rev. 1, WM-LGWO-USQD-1998-4, and WM-LGWO-LLLW-OSR, Rev.12, were evaluated to determine if the accident analyses and controls were complete and technically adequate. An additional 90 USQDs are part of the SB for LLLWS; however, not all could be reviewed in the time available for this BJC Management Assessment. The Basis for Interim Operations (BIO) which serves as the foundation document for LLLWS identified dropped heavy load and overfills of tanks/evaporator as the dominant accidents. The analysis for these accidents appears to be complete and the controls for them properly derived. Although the BIO was revised by WM-LGWO-USQD-1998-4 to address an on-site construction accident during transfer (pipe break), the analysis makes assumptions that enable the consequences to stay within the evaluation guidelines (EGs), e.g., the subject USQD assumes 5% [by volume] suspended sludge. If sampling prior to transfers does not protect this assumption, the consequences could exceed the EGs. DAC-AX276108-SSE-001 indicates that the consequences resulting from the release of 33% suspended sludge would exceed the EGs (505 rem to the co-located worker at 100m and 8 rem to the public). Without this assumption, the pipe break accident would be designated as a dominant accident. The safety basis documents for LLLWS need to be reviewed to ensure that other similar assumptions have been identified. The assumption of no more than 5% suspended sludge and any other assumption that is credited to keep the consequences below the EGs need to be established in the LLLWS Operational Safety Requirement (OSR) or associated facility-specific TSRs.

The BIO and System Safety Analysis (SSA) credit the Waste Acceptance Criteria for ensuring that the radiological inventories used in the analyses are protected. Facility personnel indicated that the WAC ensures the analyzed inventories are protected for a defined period, and that reanalysis would be required in 2005.

Identification of Controls

With the exception of the pipe break accident, the controls derived from the BIO and SSA accident analyses appear to be complete and appropriate. The derived controls from the BIO and SSAs were established in the LLLWS OSR and facility-specific TSRs. Verification of control flowdown to procedures was performed in December 2001 during the Bechtel Jacobs Safety Basis Flowdown Review. As stated above, assumptions credited to keep the consequences below the EGs should be established in the LLLWS OSR or associated facility-specific TSRs for the entire system. Additionally, the TSR controls derived from the Building 7856 SSA associated with the pipe break accident should be considered for incorporation into the LLLWS OSR to be applied to the entire LLLWS. Where engineered safety features exist, such as an interlock activated by the transfer line annulus pressure monitor alarms to close the transfer line valves, they should be the preferred method of control established in the OSR/TSR over administrative controls.

Recommendations

The BJC Management Assessment Team was not able to review all safety basis documents available for LLLWS do to time constraints. Some documents may exist that already address these recommendations, in which case, no further action would be needed. Additionally, it is not expected that the implementation of these recommendations divert significant resources from the upgrade effort to prepare a 10 CFR 830 compliant SAR and TSR for the LLLWS. This based on the frequencies of those events are $<10^{-3}$ per year and also that procedures appear to be consistent with analytical assumptions. In the interim, until the 830 approvals are implemented, the USQD evaluation should be informed of these listed issues and their potential impact. Where appropriate, implementation of these recommendations should be accomplished by addenda to the LLLWS OSR and/or BIO.

1. Establish controls for the 5% (by volume) suspended sludge assumption in the LLLWS Operational Safety Requirements (OSR).
2. Evaluate LLLWS safety basis documents to identify other assumptions that, if not protected, would result in exceedance of the Evaluation Guidelines and establish the controls in the LLLWS OSR to protect the identified assumptions.
3. Evaluate Building 7856 TSR controls for application for the entire LLLWS and establish those selected controls in the LLLWS OSR. Examples of controls to consider are the operability requirements for engineered safety features such as:
 - Pipeline annulus pressure interlock system to shutoff transfer in case of pressure loss
 - Pipeline annulus pressure monitoring and manual transfer shutoff capability shall be implemented

Other controls to consider, where engineered safety features do not exist to automatically stop the transfer upon detecting a break in the transfer line, are administrative controls to require the operator to continuously monitor the annulus pressure during transfers and to immediately stop the transfer if the pressure drops below the establish level. Analysis is expected to allow from 15 to 40 minutes for this response.

Examples of other controls that should be considered for possible application in other LLLWS facilities are:

- Valve sump box interlock terminates transfer out of Building 7856 in case of a leak inside the valve box
 - Valve sump box monitoring and manual transfer shutoff to terminate transfer out of associated tanks
 - Tank relief line availability shall be assured
 - Relief line isolation valves must be verified to be open
 - Verification of isolation of process water supply from tanks before transfer
 - Verification of isolation of sump transfer line valve in closed status
4. Coordinate the OSR and TSRs such as adding references to the TSRs in the OSR. Without the proper coordination, confusion may be created when the OSR scope includes a facility with a TSR. Is the TSR all inclusive or does the OSR still apply to that facility?

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Improvement Recommendation

1. Establish a control or place an applicability statement in the BIO to require reanalysis by 2005.

Technical Adequacy of Controls for K-25 Building

Completeness and Technical Rigor

The K25 Building BIO (K/ER-335 R1), SER ET-K25-002 and USQD-ET-K/25/27-039 Rev. 0 were reviewed. The building is segmented for Hazard Categorization purposes. One segment is considered Category 2 due to potential for criticality. The other segments are either considered Radiological (e.g. Below Category 3) or non-nuclear. The building is considered at least 700 meters from nearest offsite location (TVA Substation north of Blair Road).

The primary hazards in the Category 2 segment of the building are fissile/radioactive material contained in the process building cascade equipment including 57 deposits with greater than safe mass, fissile material stored in basement vaults (fuel pins, UF6 heel cylinders, etc) and Tc-99 contained within the process equipment. Total estimated primary radioactive material considered is 17,613 Kg Uranium and 32 Kg Tc-99.

Hazards were analyzed using DOE-STD-3011 guidance. Dominant accident scenarios consisted of:

1. Criticality initiated by a building fire (10^{-4} to 10^{-6}), earthquake (10^{-2} to 10^{-4}), Tornado/Microburst ($<10^{-6}$) or Human Error (10^{-4} to 10^{-6}). Results in a fatal dose to the facility worker and 90 rem to collocated workers (30m).
2. Airborne radioactive material release due to earthquake (6×10^{-3}) or single waste drum collapse (0.1). Results in 9.7 mrem at the site boundary.
3. HF release due to reaction of UF6 cylinder heels. Results in negligible effects at site boundary (e.g. significantly less than ERPG-2 values).

Review of the scenario development and the results of the analysis determined the approach to be reasonable with the exception of the Tornado/Microburst initiated criticality. The probability of this event was determined by the reviewers to be in the Extremely Unlikely range as opposed to Beyond Extremely Unlikely (e.g. $<10^{-6}$). However, the consequences of this event are bounded by the earthquake initiated criticality.

Identification of Controls

Controls were developed that consisted of commitments to the ETTP Radiation/Criticality Accident Alarm System (a Safety Significant system), fixed Fire Protection System, Safety Management Programs (e.g. Criticality Safety, Fire Protection, USQD Program, etc), process equipment resealing/inspection (prevents water intrusion and moderation of fissile material) and specific controls to insure Hazard Categorization assumptions. All controls were determined to be adequate for the hazards analyzed. However, due to the importance of the controls that protect the Hazard Categorization assumptions, these controls should clearly be identified as Operational Controls as opposed to being buried in the Hazard Categorization section of the BIO.

Recommendation

Based on the information above, the team concludes that the analysis and controls outlined, if rigorously implemented, provide the appropriate level of protection. Recommended improvement. Clarify that the controls listed in section 5.2.3.3 of the BIO are Operational Controls, which are necessary to maintain the Hazard Categorization assumptions.

Technical Adequacy of Controls for X-744G, X-7725, and X-7745R

Completeness and Technical Rigor

The adequacy of the safety analysis and derived controls to permit continued operations were evaluated for 3 Portsmouth facilities identified as essential for continued operations. The facilities are X-774G, X-7725, and X-7745R and are all active waste handling type facilities. X-774G and X-7725 are large storage buildings and X-7745R is a storage yard. The facilities are addressed in a site level SAR (POEF-LMES-89) as ancillary facilities and the analysis presented is minimal and qualitative in nature. The set of accident initiators is judged to be adequate however the accident progression and consequences evaluations are not presented except in the cases of criticality and large fire. The qualitative results for the criticality event are presented as below Evaluation Guides (EGs) for offsite and potentially significant onsite exposures. Although minimal quantitative data is presented in the SAR, the team has determined this to be an accurate assessment based on typical criticality events and the approximately 700 meters to the site boundary. For large fires, the SAR concludes that possible scenarios can be postulated with the potential to exceed offsite consequence EGs. However, it then dismisses the need for further analysis based on a short qualitative statement based on typical fire release transport behavior. Fire is stated to result in potentially significant onsite exposure. Although no quantitative data is presented in the SAR, the team judgement, based on inventories provided by the facility, is that radiological doses will be minimal (onsite and offsite) and the primary concern is chemical exposures. X-7725 has large quantities of hazardous materials which have not been characterized. Estimates of PCBs and other toxic material could result in exceeding ERPG 2 values.

Identification of Controls

The controls identified in the SAR are minimal. For criticality controls, an administrative program to prevent a criticality is required along with a Criticality Accident Alarm System (CAAS). The CAAS is identified as a safety significant system. For fire controls, the Fire Protection Program is identified with "essential safety actions" specified: (1) detection, (2) downwind evacuation (based on personnel training to recognize and respond to a fire), and (3) onsite fire department.

Recommendations

Based on the information above, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required for the criticality event. Based on the potential toxicological consequences from a fire, the fire protection program should be evaluated for additional credited attributes to prevent a fire such as vehicle barriers, fuel limitations, and automated detection and suppression systems for X-7725. The EMHA upgrade effort should be expedited.

Technical Adequacy of Controls for Portsmouth 326 DOE Material Storage Areas

Completeness and Technical Rigor

The Portsmouth DOE material storage areas (DMSA's) were identified essential for continued operations. These DMSA's were a result of consolidating potentially fissile contaminated DOE equipment that was in facility(s) leased to a company under NRC regulation. The lessee determined the material would not be needed to operate the facilities, and requested DOE cleanup and control the material. Following consolidation, the contractor prepared a USQD to evaluate the new operation of staging the potential fissile material in the X-326-L and X-333 facilities. The predominate hazard associated with the storage operation is a criticality event. A criticality event will result in irreversible health affects to the localized employee with minimal offsite effects to the public. The facility where the material is stored has been evaluated through an unreviewed safety question determination POEF/SWS-003-97 and the operations were shown to be bounded by site wide SAR for storage of fissile material. The accident sequences evaluated for the material storage operations are large fire and criticality. Therefore, the analysis contained in the SAR bounds the DMSA storage activities since inadvertent criticality is the accident of concern for the DMSA activities. The controls credited within the SAR to control inadvertent criticality are the nuclear criticality safety program and the criticality accident alarm system. The DMSAs are identified in the Authorization Agreement (I-00-128-0004) for Portsmouth, which identifies the site with SAR and TSR as the applicable Authorization Basis documents to these operations. The TSR has identified the CAAS and Nuclear Criticality program as requirements for operations with fissile material within these facilities.

Identification of Controls

Operational controls for the DMSA are identified within the sitewide TSRs and the SAR program descriptions for the Portsmouth Site. Application of the site wide nuclear criticality safety program is an adequate control to prevent the inadvertent criticality event, and usage of the CAAS is appropriate to protect site workers from the low likelihood of an inadvertent criticality event. The controls are appropriate to control the hazard from the DMSA activities and provide an adequate level of defense-in depth to protect the worker. Based on the information above, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required for the events postulated within the SAR.

Recommendation

Potential compensatory measures recommended: None.

Technical Adequacy of Controls for C-745

Completeness and Technical Rigor

The adequacy of the safety analysis and the derived controls to permit continued operations were evaluated for the C-745 facility at the Paducah Site. The C-745 facility is a cylinder storage yard and is addressed in a site level SAR (KY/EM-174) as an ancillary facility. The level of analysis presented is minimal and qualitative in nature. The set of accident initiators was judged to be adequate however the accident progression and consequences evaluations are not presented except in the case of large fire. For large fires, the SAR concludes there is a potential to exceed offsite consequence EGs with potentially significant onsite exposures.

Identification of Controls

The controls identified in the SAR are minimal. The Fire Protection Program is identified with specified attributes including: (1) limiting of flammable/combustibles (2) downwind evacuation (based on personnel training to recognize and respond to a fire), (3) communication with response personnel, (4) onsite fire department, and (5) cylinder inspections. Based on the information above, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required.

Recommendations

Based on the severity of potential onsite and offsite consequences, the fire protection program should be evaluated for more explicit identification of credited attributes to prevent a fire such as specific volumes on fuel limitations consistent with analysis assumptions and demonstrated ability to rapidly control access to effected areas (including offsite).

Technical Adequacy of Controls for C-746Q

Completeness and Technical Rigor

The adequacy of the safety analysis and the derived controls to permit continued operations were evaluated for the C-746Q facility at the Paducah Site. The C-746Q facility is a large storage building and is addressed in a site level SAR (KY/EM-174) as an ancillary facility. The level of analysis presented is minimal and qualitative in nature. The set of accident initiators was judged to be adequate however the accident progression and consequences evaluations are not presented except in the cases of criticality and large fire. The results for the criticality event presented (1.1 REM) are below Evaluation Guides (EGs) for offsite and the onsite consequences are qualitatively presented as "potentially significant". The team concluded this to be an accurate assessment based on typical criticality events and the approximately 800 meters to the site boundary. For large fires, the SAR concludes possible scenarios can be postulated with the potential to exceed offsite consequence EGs, however it then dismisses the need for further analysis based on a short qualitative statement based on typical fire release transport behavior. Fire is stated to have a potentially significant onsite exposure. Although no quantitative data is presented in the SAR, the teams judgement based on inventories provided by the site is that radiological doses will be minimal (onsite and offsite) and the primary concern is chemical exposures. Based on inventories provided by the site and comparative/scaling calculations, ERPG-2 limits appear to be exceeded at the 100m co-located receptor location.

Identification of Controls

The controls identified in the SAR are minimal. For criticality controls, an administrative program to prevent a criticality is required along with a Criticality Accident Alarm System (CAAS). The CAAS is identified as a safety significant system. For fire controls, the Fire Protection Program is identified with "essential safety actions" specified: (1) detection, (2) downwind evacuation (based on personnel training to recognize and respond to a fire), and (3) contact of response organizations. Based on the information above, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required for the criticality event.

Recommendations

Based on the potential toxicological consequences from a fire, the fire protection program should be evaluated for additional credited attributes to prevent a fire such as vehicle barriers, fuel limitations, and periodic inspections.

Completeness and Technical Rigor

The Paducah DOE material storage areas (DMSA's) were identified essential for continued operations. These DMSA's were a result of consolidating potentially fissile contaminated DOE equipment, etc. that were dispersed throughout several facilities that were leased to a company under NRC regulation. Once the facilities were leased the lessee determined the material would not be needed to operate the facilities and requested DOE cleanup and control the material. Following consolidation the equipment DOE prepared a safety evaluation report (SER for USQD EM&EF 98-078 and revised by SER for USQD-RM-DMSADRA-5R2) to define and approve operational controls for the safe storage of the material within the DMSA's until they could be fully characterized and the situation remediated. A hazard and accident analysis was not prepared to provide a basis for the controls; however, the predominate hazard associated with the storage operation is a criticality event. A criticality event will result in irreversible health affects to the localized employee with minimal offsite effects to the public. To compensate for the lack of a hazard analysis as a basis for control selection, subject matter experts (SME) in the area of criticality reviewed the storage operations and proposed a conservative set of controls to protect the facility and site worker. Following issuance of the original SER in September 1999, amended March 2000, a second SER was prepared to consolidate the DMSA's controls with the controls identified for a similar storage situation discovered on the non-leased portion of the Paducah Site (i.e., Building C-410). The second SER was approved in June 2001, however the SER has outstanding comments that have not been resolved. The technical rigor in both SER's for the DMSA's is lacking since no hazard analysis was prepared to provide a technical basis for control selection, but SME input was utilized in the preparation of the SER's. The conservative controls established in the September 1999 version of the SER's is not in question; however, as stated above the June 2001 SER has been approved with outstanding comments from the DEO-ORO SME's for criticality safety and authorization basis documentation preparation.

Identification of Controls

Operational controls for the DMSA's are identified within the SER. The controls were derived from subject matter expert input and not documented hazard techniques. The controls were appropriate for the hazards evaluated and provide an adequate level of defense-in depth to protect the worker.

Recommendations

Based on the information above, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required for the events postulated within the SAR. No actions are required.

Improvements recommended:

1. The technical deficiencies in the June 2001 SER should be resolved or the SER cancelled. Canceling the June 2001 SER would revert operations back to the September 1999 SER for the DMSA's which establishes a set of controls with no outstanding SME concerns.
2. Control to assure that the Paducah USEC Fire Department is aware of hazardous materials present and is trained to address events involving these materials within.

Technical Adequacy of Controls for Tower Shielding Facility (7700 A&B)

Completeness and Technical Rigor

The Safety Basis (SB) document reviewed for the Tower Shielding Facility (TSF) is the *Basis for Interim Operation for the Tower Shielding Facility*, ORNL/RRD/INT109 addresses a range of accidents, which appears to be bounding for the facility. The probability range for anticipated accidents is adjusted to be greater than 0.1 per year, instead of the 0.01 per year prescribed by DOE standards. This was justified as based on the expected 10-year life of the facility. This means that the “unlikely” probability range is between 10^{-1} per year and 10^{-4} per year instead of between 10^{-2} per year and 10^{-4} per year. This adjustment is not appropriate and the effect on the results of the risk evaluation matrix and choice of bounding accidents should be evaluated. The BIO uses qualitative evaluations for virtually all of the events and it does not provide a summary of values extracted from referenced documentation. Three dominant accident types were identified. These types were physical damage to the fuel, fire involving flammable or toxic chemicals, and inadvertent criticality. As a point of technical accuracy, reactive materials, such as sodium and lithium hydride are incorrectly identified as flammable materials in the hazard evaluation. This reflects an apparent misunderstanding of the classification process, so the original hazard screening should be reviewed. The potential for hazardous materials to be stored in locations other than those evaluated needs to be considered.

Identification of Controls

A number of hazards were identified, but not all of the controls were addressed in the TSR section. Controls discussed in the text of the document appear to have a bearing on preventing or mitigating accidents, but are not always consistently addressed. For example, the fire department is credited for mitigating the effects of a fire involving sodium and lithium hydride, but there is no indication that coordination with the fire department is required nor any specification of a required response time.

The TSF appears to be operated in a safe manner, but the process for identification of key assumptions credited in the analysis and the development of SB controls from those assumptions is not sufficient for a Category 2 facility. An effort is required to systematically evaluate the controls and develop an assurance that they are enacted with appropriate requirements, including an update to the TSR section to reflect the status of all controls assumed or credited in the analysis.

Recommendations

The BIO as written is adequate for continuing surveillance and maintenance activities of the TSF until an 830 Rule compliant document can be developed.

Based on the fact that the following controls are cited to reduce the likelihood of a scenario. If the consequences of these scenarios exceed EGs then additional controls should be considered as SB requirements for inclusion in the TSR or the BIO as follows:

- Control to require forklift inspections
- Control to require segregation of hazardous material containers from vehicle traffic paths

- Control to require storage of hazardous materials in acceptable containers

The effect on EG compliance should be evaluated using frequency binning consistent with the DOE STD 3011.

Verify that the ORNL Fire Department is aware of hazardous materials (reactive and flammable) present and is trained to address events involving these materials within.

Technical Adequacy of Controls for K-25 Site UF₆ Cylinder Yards 1066-B, E, F, J, K, and L

Completeness and Technical Rigor

The adequacy of hazard analysis and the derived controls to permit continued operations were evaluated for 6 UF₆ cylinder storage yards at ETTP identified as essential for continued operations. The facilities are storage yards 1066-B, E, F, J, K, and L, and all are mainly storage activities with limited handling operations. The storage of UF₆ cylinders in the 1066 Yards was evaluated in a safety analysis report K/D-SAR-29 and a Basis for Interim Operation K/OPS-035. Although minimal quantitative data is presented in the SAR, the team concluded this to be an accurate assessment based on typical hazard and operations conducted within the storage yards. The dominant accident scenarios for the operations were correctly evaluated, and the accident sequence with the greatest consequences to the public was from a fire. The fire accident sequence had multiple initiating events ranging from vehicle accidents to aircraft crash into a yard. The equivalent of one full (28,000 lbs. of HF/UF) is assumed to release material (3300 lbs. in 10 minutes and 4700 lbs. over 110 minutes) during the postulated SAR fire events. The bounding consequences from the postulated fire events are toxicological material and not the radiological inhalation effects. The radiological effects from the dispersion of the material are low and well below any evaluation guidelines for the onsite worker and the public. The modeling and results appear to be appropriate given that fire size and durations are minimized. Also, review of the hazard categorization indicates the hazard categorization for each of the storage yards was correctly performed.

Identification of Controls

Operational controls were identified within the SAR and the controls were derived from the hazard and accident analysis. The controls were appropriate for the hazards evaluated and provide an adequate level of defense-in depth to protect the worker and the public. Specifically for the bounding accident case of fire the controls, the Fire Protection Program is identified with "essential safety actions" specified: (1) minimization of flammable and combustible material, (2) downwind evacuation (based on personnel training to recognize and respond to a fire), (3) Access restrictions or passive barriers to protect against large fires from trucks, (4) No refueling operations are allowed within the cylinder yard for vehicles utilized in the operations, (5) onsite fire department and communications with them when operations within the yard are occurring.

Recommendations

In general, the team concludes that the controls outlined, if rigorously implemented, provide the appropriate level of protection required for the events postulated within the SAR.

The only exception was the observation that commercial trains may travel across the ETTP site and come within 25 ft of the 1066-B yard. The materials transported by the train are not controlled and the abnormal environment the material may pose on the UF₆ cylinders may not be analyzed in the current AB document. Control of the material allowed access to ETTP via rail and its proximity to the storage yard is warranted.

Technical Adequacy of Controls for K-27

Completeness and Technical Rigor

The analysis and controls described in the *Basis for Interim Operation of the Low-Enriched Uranium (LEU) Process Building K-27 (K/ER-334)* and the *Fire Hazards Analysis for Building K-27 (BJC/OR-442)* were evaluated for completeness and technical adequacy. Building K-27 is correctly categorized as a Hazard Category 3 facility. The categorization is based upon comparison of the total facility inventory to the Hazard Category 2 and 3 limits in DOE-STD-1027.

The existing analysis considers "bounding" accidents (earthquake, forklift/handling error, facility fire, wind, drum corrosion, contaminated surfaces, mechanical failure/operator error, and tank corrosion) for both radiological and chemical hazards. This approach was acceptable when the Safety Basis was approved in January of 1998. Analysis within the BIO states the risk is below the DOE evaluation guidelines (Risk Bin III and IV) for the public and co-located worker at 600 meters.

As mentioned in the above paragraph, the methodology used in the safety basis only considers bounding accidents for the public (950m) and co-located worker (600m). Although this approach is acceptable, the analysis lacks much of the rigor associated with the current DOE Safety Basis requirements. Lack of documentation for secondary accidents will make modifications or discoveries difficult to analyze. This is not a significant problem at this time since the facilities is only conducting routine surveillance and maintenance activities, but a more detailed analysis will need to be completed before additional operations can be authorized. In addition, movement of the co-located worker from 600 meters to 100 meters will result in a corresponding increase in the estimated consequences. Analysis will be required to determine if the increased consequences will change the current risk associated with the accidents. In addition, and of greatest concern, is the computational method used to derive the offsite consequences associated with a release of chemicals. The use of an average ERPG may have inappropriately reduced the consequences.

Identification of Controls

There were no Risk Category I or II accidents identified in the analysis. As such, there are no Safety Basis controls associated with this facility. An operational "Best Management Practice" was identified (Process Equipment Inspection) to prevent the spread of contamination. Additional controls may be required if the new chemical release computations show the consequences exceed the evaluation guideline

Recommendations

Potential Compensatory Actions: The review of the safety basis identified one required action.

1. The computations supporting the chemical analysis in Appendix B of the BIO utilize an average ERPG-2 value for analysis. Using this approach, the consequences from a chemical release are approximately two orders of magnitude below the evaluation guidelines. Utilizing an average ERPG-2 value is considered technically inadequate and a new computation of

chemical consequences should be completed for the individual chemical constituents as soon as possible to determine if new controls are required. In the mean time, operations should be limited to surveillance and maintenance activities.

Recommended Improvements: Several areas for improvement were identified in this review. These recommendations do not affect the operational safety of the facility, but should be completed during the next update of the DSA.

1. Complete a more systematic review of hazards and potential secondary accidents in the upcoming 10CFR 830 update.
2. The Facility Worker and Co-located Worker should be analyzed consistent with the requirements in 10CFR830.
3. Use initiating frequencies in the analysis instead of expected frequencies. For example, the frequency of the forklift accident should be $<10^{-2}$. This change in frequency does not change the risk bin associated with the accident, but does provide a more realistic "unmitigated" frequency.
4. Include periodic fire inspections as a Best Management Practice.

Attachment 2
Facility Review Checklists

DNF SAFETY BOARD

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Review Form

Facility: Low Level Liquid Waste

Date of Review: February 8, 2002

Please answer the following questions after your review of the Safety Basis Flow Down Review Package (SBFDRP) for your facility:	YES	NO
1. Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?	<input type="checkbox"/>	X
2. Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?	<input type="checkbox"/>	X
3. Are there any known or suspected problems with hazard identification documented in the facility's authorization basis document(s)?	<input type="checkbox"/>	X
4. Are there any known or suspected problems with the hazard categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?	<input type="checkbox"/>	X
5. Are there any known or suspected discrepancies between the operations/ activities described in the SBFDRP for the facility and the activities/operations occurring in or those proposed for the facility in the near term?	<input type="checkbox"/>	X
6. Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?	<input type="checkbox"/>	X
7. Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?	<input type="checkbox"/>	X
8. Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?	<input type="checkbox"/>	X
9. Are there any known significant problems with the existing authorization basis document(s) for the facility?	<input type="checkbox"/>	X
10. Are there any known or suspected problems with the TSR/OSR for the facility?	X	<input type="checkbox"/>
11. Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?	<input type="checkbox"/>	X
12. Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other document containing the derived controls for the facility?	<input type="checkbox"/>	X
13. Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Mr. Dae Chung) and the SBFDRP for the facility?	<input type="checkbox"/>	X
14. Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?	<input type="checkbox"/>	X
15. Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?	<input type="checkbox"/>	X

Review Form

Questions (continued)	YES	NO
16. Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear Criticality Safety Program for the facility? (e.g., NCSA/NCSEs address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc.)		X
17. Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g., combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazard Analysis (FHA) exist for the facility and accurate; FHA results brought over into the facility's accident analysis and properly implemented; fixed fire protection systems exist in facility and properly maintained [if credited in accident analysis]; etc.)		X
18. Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g., Pre-Fire Plan exist for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)		X
19. Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g., work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)		X
20. Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?		X

Please provide an explanation for any YES response to the questions in the Comment section below.

1. A three hour review meeting was held with the original authors of the SBFDRP (Vertical Slice-Back Page). The original SBFDRP provided to the review team lacked quality and the attachments were very difficult to follow. Following the meeting, the team concluded that the methodology and documentation supporting the SBFDRP does not contain any known or suspected discrepancies from our understanding of the facility operations.
2. During the walk down of the facility there were no additional hazardous materials or conditions noted other than those specified in the SBFDRP.
3. There were no problems found with the nuclear hazard identification documented in the facilities authorization basis. The discussions of non-nuclear hazards such as those documented during a typical ISMS program are not well discussed in the current authorization basis documents.

Review Form

4. The LLLW system is largely made up of numerous CAT II and III Nuclear Facilities. The team agrees with the Hazard Classification and experience of both the facility representative and the project manger has reviewed the classification on numerous occasions.
5. Field operational activities were observed. Based on this walk down, review of relevant documents, and previous surveillances conducted by the facility representative, no discrepancies were identified between the operational activities described in the SBFDRP and operations occurring at the facilities evaluated.
6. Calculations that support the hazard analyses were not reviewed by the team, but discussions with the authors of the SBFDRP confirmed that they did review calculations and all supporting documents identified in the facility authorization basis. Several questions were posed to the authors during the review meeting and were answered correctly along with the supporting documentation.
7. No discrepancies were denoted between the SBFDRP and the current approved authorization basis. Notebooks containing the latest authorization basis were reviewed and questions were posed to the authors of the SBFDRP and all were described correctly.
8. The authors of the SDFDRP read the entire authorization basis documents and denoted anything that could possibly be construed as a "control". These notes were then compared to the current controls in place and no additional ones were noted.
9. The authorization basis for this system is dated and is still primarily covered by a BIO OSR and a large number of USQs. However these documents are fully sufficient for the execution of the work currently happening within the system until a 10 CFR 830 compliant documented safety analysis is prepared.
10. One Finding was identified during the SBFDRP. Two TSR completed for various portions of the LLLW system do not contain an appendix for facility design features for safety as required by DOE Order 5480.22. BJC management informed the team that this correction will be made at the time of the 830 compliant SAR submittal. The team agrees with the corrective action for the finding and the schedule for submittal.
11. Flow down of OSR/TSR requirements is implemented through a database maintained by Duratek Federal Services. This database was reviewed for adequacy by the SBFDRP team and all requirements flowed down in at least one procedure and/or program and in several instances multiple times to help ensure implementation.

Review Form

12. Random checks in the control room operation were made and they appeared to be adequate during this review. In addition, the facility representative routinely assesses the operations of the LLLW system.
13. There are no conflicts between the DOE HQ Independent Safety Basis Assessment report and the SBFDRP. There was one factual accuracy found in the HQ Report stating "An FSAR was developed per DOE-STD-3009 and submitted to DOE as 10CFR830 compliant, but it was recently pulled back." The previous submittal of the FSAR was not 830 compliant.
14. The finding and observations in the SBFDRP were reviewed by the team and discussed with the authors. The team agrees with the information in the SBFDRP.
15. The LLLW system has operated safely for many years. There are no issues identified in this review that justify anything other than full operations.
16. A meeting was held with 2 members of the DNFSB on Wednesday, February 6th and the NCSO for the Low-level Liquid Waste System was reviewed in detail. Presentations were made discussing the technical basis of the NCSO and are included in the evidence file along with the attendance sheet for the meeting. Criticality is not an issue for the LLLW system.
17. No issues were identified with the Fire Protection.
18. All required Emergency Management documents were in existence and available for use. A Local Emergency Manual (orange book) exists that covers all 73 Liquid and Gaseous Waste Operations facilities. It is updated at least annually by the Duratek Waste Disposal Supervisor and a UT-Battelle Emergency Management representative. It is kept in the Building 3130 Command Center and in the Lab Shift Superintendent's office. The Duratek Waste Disposal Supervisor has taken the web based Local Emergency Supervisor training. All 31 Duratek employees are trained members of the ORNL E-Squad, along with members from UT-Battelle, Weskem, etc. Duratek holds a quarterly table top exercise that simulates some process or emergency upset condition. They also hold an annual exercise that involves field plan in a simulated emergency. They also get emergency response field experience during callouts for the E-Squad. Additionally, they participate in lab-wide shelter in place and evacuation drills (to assembly stations) that are sponsored by the Lab Shift Superintendent. Accountability (building search) in case of emergency is assured by the Waste Disposal Supervisor, and by any personnel who are working in a facility. Entrance to operating facility buildings is by proximity badge reader, so is limited to authorized personnel. Project personnel were familiar with the Emergency Management Hazards Assessment and Emergency Action Levels for this project. They are currently involved with their review, and will issue a revision.

Review Form

19. The USQ log was reviewed and appeared to be complete. There are a large number of USQs currently active, but it appears through a rigorous configuration control program that any new requirements are being implemented as required. Both the facility representative and TRU waste program manager have participated in processing many of the USQs submittals for the LLLW system. The subcontractor USQ program appears satisfactory.
20. There were no conditions identified for the LLLW system that place workers, public, or the environment at risk. Based on this review, and several years of team experience reviewing and participating on projects involving the LLLW system it should continue full operations.

List Team Members Names below:

Gary L. Riner	TRU Waste Program Manager
Carl J. Pilj	Facility Representative
Brenda Hawks	ES&H Team Leader
Jim Landmesser	Fire Protection Engineer
John Pearson	Emergency Management

Additional Team Member Participation:

Mildreds Lopez-Ferre	Waste Operations Team Leader
Scott Foster	Safety Basis Engineer

**Review Form for
Safety Basis Flow Down Review Package (SBFDRP)
7823B, C, D LLW Storage Facilities**

1. Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?
 - Yes
 - The USQD-OR-NM-53-0052, Rev. 0., for implementation of WD-CAL-001 Revised Category 2 Threshold Quantities for ORNL Waste Disposition Facilities, has been used as the basis for the facility categorization. This document changes the Category 2 levels by using an alternate release fraction for the four different types of waste identified in the SAR. It is not clear that DOE has performed adequate technical evaluation of this document.
2. Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?
 - No
 - EMHA BJC/OR-469R0 evaluated the hazards and screened out 7823 due to the low inventory.
3. Are there any known or suspected problems with hazardous identification documented in the facility's authorization basis document(s)?
 - No
 -
4. Are there any known or suspected problems with the hazardous categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?
 - Yes
 - Alternate release fraction determinations have been questioned (see #1). Amounts of material in 7823B, C, D, E are well below Category 3 levels. DOTCALC, the system used to calculate and control the radionuclide inventory, is not a validated/verified system. Outstanding Occurrence report for control of percent of material less than 10 microns.
5. Are there any known or suspected discrepancies between the operations/activities described in the SBFDRP for the facility and the activities/operations occurring in or proposed for the facility in the near term?
 - No
 -
6. Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?
 - Yes
 - Dae Chung Report: Adequacy of Hazard Categorization, The facility is assigned Hazard Category 3 without an adequate basis for that category being provided in the SAR. Adequacy of Hazard Evaluation. The hazard evaluation is inadequate. The evaluation is not in DOE-STD-3009 format. Adequacy of Controls, The overall control selection is inadequate.
7. Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?
 - No
 -
8. Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?
 - Yes
 - There are four waste types defined by the SAR and used for direct control of particle size for dispersion analyses. The waste types are not currently addressed in the current procedures as required. However, it

**Review Form for
Safety Basis Flow Down Review Package (SBFDRP)
7823B, C, D LLW Storage Facilities**

appears that they are tracked sufficiently in WIMS to maintain accurate radiological inventory control.
(Noted in SBFDRP).

9. Are there any known significant problems with the existing authorization basis document(s) for the facility?
- SABD's are currently out of date. Obsolete organizations are identified and responsibilities are referenced. USQD's have not been performed to address these changes. This applies to several programs such as QA, NCS, Rad Protection, etc.
10. Are there any known or suspected problems with the TSR/OSR for the facility?
- Yes
 - Waste profile documents contain this requirement, however the flow down to the generator can not be confirmed.
11. Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?
- Yes
 - Building 7823B, C, and D will need to be categorized as one unit for DOE-STD-1027-92 hazard categorization. However, the total inventory is small compared to the limits and this should not result in a higher category. The sum of the fractions was recalculated considering the three buildings as one facility; the result was $2.7E-3$.
12. Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other documents containing the derived controls for the facility?
- No
 - Derived controls as defined in the SAR limit on allowable radionuclide inventory. Waste material characteristic limit release.
13. Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Mr. Dae Chung) and the SBFDRP for the facility?
- Yes
 - See Item 6
14. Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?
- Yes
 - See Item 1
15. Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?
- SABD-Yes, Operation and Procedures - No
 - Facility Categorization - Review of DAC, Isotope Inventory - Validate DOTCalc
16. Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear Criticality Safety Program for the facility? (e.g., NCSA/NCSE's address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc.)
- No

**Review Form for
Safety Basis Flow Down Review Package (SBFDRP)
7823B, C, D LLW Storage Facilities**

- Review of NCSB by NSD SME. There is not a credible criticality scenario because of the facility limits.
17. Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g., combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazard Analysis (FHA) exist for the facility and accurate; FHA results brought over into the facility's accident analysis and properly implemented; fixed fire protection systems exist in the facility and properly maintained [if credited in accident analysis]; etc.)
- Due to the lack of physical separation between the building they will be consider as one facility for facility categorization
 - No other issues identified
18. Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g., Pre-fire Plan exists for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)
- No issues identified
 -
19. Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g., work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)
- No
 - There is a corrective action being implemented regarding change to a facility (not this particular facility) prior to completion of the USQD process. This is regarding training issue for USQD's and is being implemented system wide.
20. Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?
- Yes
 - The facilities 7823 B, C, & D have been segmented, however, because of their proximity they need to be considered as one for Hazard Categorization. WESKEM has issued a memo to require this effective 2/8/02. The SAR evaluates handling and earthquake accidents and assumes that 10% and 23% of the containers, respectively, are breached. An evaluation needs to be performed to determine if barriers or other protective devices are needed to prevent an accident that could rupture more than this percentage of containers. The procedures which control SAB related items (stacking height, inventory, etc.) need to be identified and controlled such that changes to the SAB related items are not made without appropriate review.

Review Form

Facility: Molten Salt Reactor Experiment (MSRE)

Date of Review: February 8, 2002 and February 11, 2002

Please answer the following questions after your review of the Safety Basis Flow Down Review Package (SBFDRP) for your facility:	YES	NO
1. Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?		X
2. Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?		X
3. Are there any known or suspected problems with hazard identification documented in the facility's authorization basis document(s)?		X
4. Are there any known or suspected problems with the hazard categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?		X
5. Are there any known or suspected discrepancies between the operations/ activities described in the SBFDRP for the facility and the activities/operations occurring in or those proposed for the facility in the near term?		X
6. Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?		X
7. Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?		X
8. Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?		X
9. Are there any known significant problems with the existing authorization basis document(s) for the facility?		X
10. Are there any known or suspected problems with the TSR/OSR for the facility?	X	
11. Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?		X
12. Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other document containing the derived controls for the facility?	X	
13. Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Mr. Dae Chung) and the SBFDRP for the facility?		X
14. Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?		X
15. Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?		X

Review Form

Questions (continued)	YES	NO
16. Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear Criticality Safety Program for the facility? (e.g., NCSA/NCSEs address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc.)		X
17. Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g., combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazard Analysis (FHA) exist for the facility and accurate; FHA results brought over into the facility's accident analysis and properly implemented; fixed fire protection systems exist in facility and properly maintained [if credited in accident analysis]; etc.)		X
18. Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g., Pre-Fire Plan exist for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)		X
19. Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g., work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)		X
20. Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?		X

Review Form

Please provide an explanation for any YES response to the questions in the Comment section below.

10. The DAE Chung Report indicated that several Defense in Depth controls should be elevated to LCO's. Limiting Conditions of Operations vs. Defense in Depth will be re-evaluated in the BIO/TSR update scheduled for June 30, 2002.

It was also determined that the need to make the criticality alarm system a safety significant system should be re-evaluated. The Team noted, 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.

12. The BJC assessment noted that a computer program to track inventory was not checked. Closed-In the future instead of using the computer program, MSRE personnel will use manual calculations and independently check the calculations.

The BJC assessment noted that the requirement regarding moisture control/venting cask needs clarification. Procedures MSRE-OR-506 and 547 to clarify requirements for preventing and monitoring for air intrusion to the canister containing uranium laden charcoal are scheduled to be revised by April 30, 2002.

The BJC assessment noted that CLF_3 inventory controls need to be proceduralized. Corrective action plan to be developed by March 19, 2002.

List Team Members Names below:

Mike Jugan	Team Lead & MSRE Project Manager
Rick Farr	Facility Representative
Brenda Hawks	SME Nuclear Criticality Safety
Jim Landmesser	SME Fire Protection Engineer
John Pearson	SME Emergency Management

Review Form

Facility: Tower Shielding Reactor (TSR)

Date of Review: February 8, 2002

Please answer the following questions after your review of the Safety Basis Flow Down Review Package (SBFDRP) for your facility:	YES	NO
1. Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?		X
2. Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?		X
3. Are there any known or suspected problems with hazard identification documented in the facility's authorization basis document(s)?		X
4. Are there any known or suspected problems with the hazard categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?		X
5. Are there any known or suspected discrepancies between the operations/ activities described in the SBFDRP for the facility and the activities/operations occurring in or those proposed for the facility in the near term?		X
6. Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?		X
7. Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?		X
8. Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?		X
9. Are there any known significant problems with the existing authorization basis document(s) for the facility?		X
10. Are there any known or suspected problems with the TSR/OSR for the facility?		X
11. Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?		X
12. Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other document containing the derived controls for the facility?	X	
13. Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Mr. Dae Chung) and the SBFDRP for the facility?		X
14. Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?		X
15. Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?		X

Review Form

Questions (continued)	YES	NO
16. Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear Criticality Safety Program for the facility? (e.g., NCSA/NCSEs address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc.)	<input type="checkbox"/>	X
17. Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g., combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazard Analysis (FHA) exist for the facility and accurate; FHA results brought over into the facility's accident analysis and properly implemented; fixed fire protection systems exist in facility and properly maintained [if credited in accident analysis]; etc.)	<input type="checkbox"/>	X
18. Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g., Pre-Fire Plan exist for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)	<input type="checkbox"/>	X
19. Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g., work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)	<input type="checkbox"/>	X*
20. Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?	<input type="checkbox"/>	X

Review Form

Please provide an explanation for any YES response to the questions in the Comment section below.

12. 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. A corrective action plan to address these observations is required. It was concluded that no compensatory measures were required for continued operations.

19*See TSR Review Report-Minor point in that USQD was not performed in a timely manner for removal of a hazard (Na and LiOH shields)during contractor change. Closed-Addressed in a negative USQD.

List Team Members Names below:

Mike Jugan	Team Leader
Leon Duquella	TSR Project Manager
Rick Farr	Facility Representative
Brenda Hawks	SME Nuclear Criticality Safety
Jim Landmesser	SME Fire Protection Engineer
John Pearson	SME Emergency Management

Facility: DMSAs with Fixed CAAS Coverage
 Date of Review: February 14, 2002

Please answer the following questions after your review of the Safety Basis Flow Down Review Package (SBFDRP) for your facility.	Yes	No	Justification
1) Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?	X		SBFDRP does not provide a detailed description on the DMSAs since the review combined DMSAs with the C-746-Q Facility on the Management Assessment Checklist and Report (MACR). SBFDRP Observation #2 and #6 indicates BJC reviewers are not certain what SER controls apply and are implemented. Paducah Site Office disagrees. The Safety Basis requirements associated with DMSAs that are under fixed Criticality Alarm System (CAAS) coverage are clearly implemented. Per BJC letter dated December 21, 2001, no work is being performed in the DMSAs which do not have CAAS coverage, due to Safety basis review issues involving the Temporary CAAS (TCAAS).
2) Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?		X	SBFDRP MACR for Facility Hazard Characterization Item #6 identifies that characterization information does not exist. The hazardous materials in the DMSAs are uncharacterized. The SBFDRP describes the characterization process. Paducah Site Office concurs and believes the appropriate controls are in place to address the unquantified hazards.
3) Are there any known or suspected problems with hazard identification documented in the facility's authorization basis document(s)?		X	The DOE SER identifies the Hazard Category 2 concern that is supported by the Dae Chung review (pp. E-19). The Health and Safety Plan (HASP) documents the non-nuclear hazards within the DMSAs.
4) Are there any known or suspected problems with the hazard categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?		X	The DOE SER identifies the Hazard Category 2 concern that is supported by the Dae Chung review (pp. E-19). The DMSAs are categorized as category 2 nuclear facilities. The uncharacterized materials with the potential for nuclear criticality hazards in the DMSAs, necessitate that this level of categorization be applied. The Health and Safety Plan (HASP) documents the non-nuclear hazards within the DMSAs.
5) Are there any known or suspected discrepancies between the operations/activities described in the SBFDRP for the facility and the activities/operations occurring in or those proposed for the facility in the near term?		X	SBFDRP does not provide a detailed description on the DMSAs since the review combined DMSAs with the C-746-Q Facility on the Management Assessment Checklist and Report (MACR). However, the DMSA operations/activities are consistent with the referenced documents on the MACR.
6) Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?	X		The Dae Chung report indicates failure to resolve ORO AMESH review comments could affect the adequacy of the hazards analysis (pp. E-19). However, the report also indicates the 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.

Facility: DMSAs with Fixed CAAS Coverage
 Date of Review: February 14, 2002

7) Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?	X		See justification for number 1.
8) Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?	X		See justification for number 6.
9) Are there any known significant problems with the existing authorization basis document(s) for the facility?		X	See justification for number 6. Several independent reviews indicate the controls are adequate for continuing characterization activities (ATL, Dac Chung (pp. E-20, G-2)). However, the DOE Paducah Site Office does not see these problems as significant for continued safe operations in the DMSAs.
10) Are there any known or suspected problems with the TSR/OSR for the facility?		X	The CAAS TSR is the primary TSR requirement associated with the DMSAs. No issues have been identified as the result of the recent Safety Authorization Basis assessments. Some of the SER controls may need to be incorporated as TSR controls.
11) Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?		X	BJC's procedural process does not require that the flowdown of safety requirements into implementing procedures be controlled. However, a crosswalk has been developed for the Paducah Site in general and the DMSAs in particular. The crosswalk ensures the flowdown of Safety Basis requirements. The SBFDRP Observation #6 identifies some weaknesses in how the SER flowdown was evaluated but not on actual flowdown problems.
12) Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other document containing the derived controls for the facility?	X		Deficiencies have been identified through the DOE Paducah Site Office Monthly Oversight and Inspection Reports (MOIR). The deficiencies are being addressed by BJC in response to these findings. However, the DOE Paducah Site Office does not see these problems as significant for continued safe operations in the DMSAs.
13) Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Dac Chung) and the SBFDRP for the facility?		X	Since the scope and purpose of the DOE-HQ Independent Safety Basis Assessment of BJC and the SBFDRP appear to be different, it is not very useful to compare the two documents directly. However, based on our review of the two documents, there do not appear to be any discrepancies.
14) Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?		X	<p>Finding #2 and Observations #3, #4, #5 and #6 do not apply to DMSAs.</p> <ul style="list-style-type: none"> Finding #1 can be applied to DMSAs even though it was based upon the cylinder yards fire scenario. Observation #1 does not impact safety, since the Authorization Agreements do not provide additional technical justification or safety related requirements. Observation #2 is valid. The lack of DOE approval has made the Safety Authorization Basis more complex. However, the additional complexity has not resulted in a degradation of the safety within the DMSA operations.

Facility: DMSAs with Fixed CAAS Coverage

Date of Review: February 14, 2002

<p>15) Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?</p>	<p>X</p>	<p>See justification for number 14.</p>
<p>16) Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear criticality Safety Program for the facility? (e.g. NCSA/NCSEs address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc)</p>	<p>X</p>	<p>BJC procedures do not provide clear guidance on how to select and control posting requirements used for fissile material operations. The NCS requirements derived within Nuclear Criticality Safety Evaluations (NCSEs) are incorporated in implementing procedures and are also included on postings near the fissile material operations within the field. Inconsistencies observed in several postings for fissile material operations (from Paducah Monthly Oversight Reports) indicate that the selection process used to determine which NCS controls are posted appears to be inadequately defined. However, the DOE Paducah Site Office does not see these problems as significant for continued safe operations in the DMSAs. Additionally, the Dae Chung report indicates the BJC NCS Program at Paducah is adequately staffed and conforms to the BJC program requirements for NCS engineers (pp. G-2)</p>
<p>17) Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g. combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazards Analysis (FHA) exist for the facility and accurate; FHA results brought over into facility's accident analysis and properly implemented; fixed fire protection systems exist in facility and properly maintained [if credited in accident analysis]; etc.)</p>	<p>X</p>	<p>Fire Hazards Analysis (FHA) and the combustible control programs do not adequately address the accumulation or compilation of combustible materials within an area. In particular, the wood pallets used to store waste drums are often replaced by metal or plastic pallets. The wood pallets are then stacked and sometimes wrapped in plastic (near the waste containers). In addition, the wood pallets occasionally accumulate lubricating oil originating from the uranium enrichment process. Thus, the operation that was originally analyzed may differ from the as-found conditions. This change in configuration should be evaluated and will be identified as a finding in the February MOIR.</p>
<p>18) Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g. Pre-Fire Plan exist for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)</p>	<p>X</p>	<p>The DOE Paducah Site Office believes the Emergency Management Program is adequately implemented at Paducah. However, the Emergency Action Levels for fire are general and rely heavily on the Plant Shift Superintendent's decisions. Additionally, Work Authorizations with the United States Enrichment Corporation (USEC) have not been signed, but this support is being provided under "bridge letters" on a monthly basis .</p>

Facility: DMSAs with Fixed CAAS Coverage

Date of Review: February 14, 2002

19) Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g. work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)		X	The issues that have been identified by NCD personnel focus on the over conservatism of the USQD process (i.e. declaring a USQ when a condition should be evaluated as a PISA). The Dae Chung report finding MG9 (pp. 24) indicates subcontractors do not use the BJC procedure for performing USQDs. This is not the case at Paducah.
20) Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?		X	Recent assessments of the oversight process have not identified any safety issues that are an immediate threat to Health or Safety. However, DOE will require a two-day advance notification to the Paducah Site Office for entry into phase 2 DMSAs for initial nuclear criticality safety characterization.

Review Team Members:

Craig Czuchna	Project Manager
Greg Bazzell	Facility Representative (Paducah)
Tom Hines	Support Services Subcontractor (NRE)
Brenda Hawks	Nuclear Criticality Safety SME
Jim Landmesser	Fire Protection SME
Catherine Schidal	Facility Representative (qualified)
Mike Henry	Support Services Subcontractor (NRE) for Emergency Management

Review Form

Facility: Portsmouth Critical Category 2 Facilities
X-7725, X-7745R, X-362 L-cage, X-326 DMSAs, X-744G

Date of Review: 2/25/02

Please answer the following questions after your review of the Safety Basis Flow Down Review Package (SBFDRP) for your facility:	YES	NO
1. Are there any known or suspected discrepancies between the SBFDRP and your understanding of the facility and its operations?	X	
2. Are there any known or suspected hazardous materials or conditions in the facility that were not identified in the SBFDRP for that facility?		X
3. Are there any known or suspected problems with hazard identification documented in the facility's authorization basis document(s)?		X
4. Are there any known or suspected problems with the hazard categorization for the facility (including alternate methods from DOE-STD-1027-92 or inventory control)?		X
5. Are there any known or suspected discrepancies between the operations/ activities described in the SBFDRP for the facility and the activities/operations occurring in or those proposed for the facility in the near term?		X
6. Are there any known or suspected problems with the hazard analyses documented in the facility's authorization basis document(s)?	X	
7. Are there any known or suspected discrepancies between the current DOE approved authorization basis document(s) for the facility and the SBFDRP?		X
8. Are there any known or suspected problems with the way controls were derived from the hazard analyses and documented in the facility's authorization basis document(s)?		X
9. Are there any known significant problems with the existing authorization basis document(s) for the facility?		X
10. Are there any known or suspected problems with the TSR/OSR for the facility?		X
11. Are there any known or suspected problems with flowing down the requirements of the TSR/OSR for the facility into operating procedures, processes, and/or programs?		X
12. Are there any known or suspected problems with the implementation of operating procedures, processes, and/or programs for the requirements of the TSR/OSR/other document containing the derived controls for the facility?	X	
13. Are there any conflicts between the report for the DOE-HQ Independent Safety Basis Assessment of BJC and DOE-ORO (led by Mr. Dae Chung) and the SBFDRP for the facility?	X	
14. Do you disagree with a finding or observation in the SBFDRP for the facility or was the finding or observation not comprehensive enough?	X	
15. Does one or more of the findings or observations in the SBFDRP for the facility represent a significant problem that calls into question whether the facility's operations should continue?		X

Review Form

Questions (continued)	YES	NO
16. Are there any known or suspected conditions that calls into question the effective implementation of the Nuclear Criticality Safety Program for the facility? (e.g., NCSA/NCSEs address fissile material operations in the facility when needed and the NCSA/NCSE requirements are appropriately implemented; etc.)		X
17. Are there any known or suspected conditions that calls into question the effective implementation of the Fire Prevention Program for the facility? (e.g., combustible load program exists and properly implemented in the facility; hot work program exists and properly implemented in the facility; Fire Hazard Analysis (FHA) exist for the facility and accurate; FHA results brought over into the facility's accident analysis and properly implemented; fixed fire protection systems exist in facility and properly maintained [if credited in accident analysis]; etc.)		X
18. Are there any known or suspected conditions that calls into question the effective implementation of the Emergency Management Program for the facility? (e.g., Pre-Fire Plan exist for the facility; Facility-Level Emergency Plan/Procedure exist; Emergency Drill Program exists and implemented for the facility; etc.)		X
19. Are there any known or suspected conditions that calls into question the effective implementation of the Unreviewed Safety Question Program for the facility? (e.g., work control process screens for USQ implications; as-found conditions are screened for USQ implications; changes to the facility or its procedures are screened for USQ implications)		X
20. Are there any conditions that would or does require immediate implementation of compensatory measures to protect workers, public, or environment?		X

Please provide an explanation for any YES response to the questions in the Comment section below.

<p>COMMENTS: (continue as needed on attached sheets)</p> <p>Please see attached sheet with explanations for Yes responses for questions 1, 6, 12, 13, and 14.</p>
--

List Team Members Names below:

Explanation of Yes Responses to Portsmouth Safety Basis Review Form

1. The SBFDRP did not identify the Process hazard Analysis/Plant Safety Operational Analysis (PrHA/PSOA) as the documents that identify the hazard category for PORTS Category 2 facilities.
6. The Portsmouth "B" comments on the 1998 SAR update have never been resolved.
12. The SAR identified control of combustibles in the DUF₆ cylinder yards. BJC has identified a procedural problem with control of combustibles in the DUF₆ cylinder yards. The procedure does not clearly flow down the SAR requirements. Because there is lack of evidence that the SAR requirements are specifically flowed down, administrative controls are being implemented by the BJC supervisor at the cylinder yard while the current procedures are being revised.
13. The Portsmouth staff is still reviewing and comparing the SBA by BJC and the Chung report. For example, the Chung report identifies deficiencies with the DMSA program at Paducah and extended the deficiencies to Portsmouth. The comparison between the DMSAs at Paducah and Portsmouth is not correct, since the two programs are managed totally different. In addition, the comment on hazard categorization is questionable and Portsmouth does not agree with the statement.
14. There are discrepancies in the SBFDRP, such as training for Facility Managers.

Attachment 3

Nuclear Facility Assessment Reports

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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 ETTP 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 (UF₄), 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}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 ft² (4550 m²) and a western section of approximately 37,000 ft² (3440 m²). Across the north side of the building is an open but covered area of 20,000 ft² (1860 m²) 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, UF₄, UO₂F₆, 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 12-13th 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	
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		
	DOE APPROVAL PLAN				
	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 Comustible 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