



02-0001104

## Department of Energy

Oak Ridge Operations Office  
P.O. Box 2001  
Oak Ridge, Tennessee 37831—

April 18, 2002

RECEIVED

02 APR 19 AM 10:35

DNF SAFETY BOARD

The Honorable John T. Conway, Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed is the *Corrective Action Plan for Integrated Safety Management System Improvements* for the Oak Ridge Operations Office and the Bechtel Jacobs Company LLC. The plan addresses issues from the Defense Nuclear Facilities Safety Board (Board) letter of October 15, 2001, as well as from recent assessments and reviews conducted at Oak Ridge.

The plan represents a comprehensive set of actions necessary to assure the protection of the public, workers, and environment through implementation of technically adequate and 10 CFR 830 Subpart B-compliant safety basis documents, tailored to current missions and hazards, with an effective, enabling Integrated Safety Management Systems and supporting safety management programs.

The Department wishes to brief the Board the week of May 13, 2002, or at your earliest convenience, on the contents of this plan.

Sincerely,

A handwritten signature in black ink that reads "m. Holland".

Michael D. Holland  
Acting Manager

Enclosure  
cc (w/enclosure):  
R. Card, US  
J. Roberson, EM-1  
M. Johnson, SC-2  
M. Whitaker, S-3.1

**U.S. Department of Energy  
Oak Ridge Operations Office  
and  
Bechtel Jacobs Company LLC**



RECEIVED  
02 APR 19 AM 10:35  
UNIFORM ELECTRONIC

**Corrective Action Plan  
for Integrated Safety Management  
System Improvements**

**April 2002**

**U.S. Department of Energy  
Oak Ridge Operations Office  
and  
Bechtel Jacobs Company LLC**

**Corrective Action Plan  
For Integrated Safety Management  
System Improvements**

Date Issued—April 2002

RECEIVED  
02 APR 19 AM 10:35  
UNIVERSITY OF ALABAMA

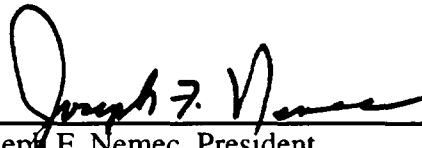
Approved by:



---

Michael D. Holland, Acting Manager  
Oak Ridge Operations Office

Approved by:



---

Joseph F. Nemecek, President  
Bechtel Jacobs Company LLC

# CONTENTS

CONTENTS .....	iii
ACRONYMS.....	v
EXECUTIVE SUMMARY .....	vii
1.0 Introduction .....	1
2.0 Determination of Nature and Extent of Condition .....	3
2.1 EM SB 10 CFR 830 Compliance Review .....	3
2.2 BJC NTS Report.....	3
2.3 DNFSB Letter of October 15, 2001 .....	3
2.4 BJC Executive Management Assessment by Outside Experts.....	4
2.5 DOE-ORO Manager Revocation of DOE-ORO and BJC ISMS Verification .....	4
2.6 DOE-ORO and BJC Evaluation of Orders of Interest to the DNFSB.....	4
2.7 BJC Baseline Assessment of Training and Qualifications for Nuclear Facilities Management .....	4
2.8 BJC SB Flowdown Assessment and DOE-ORO Independent Verification.....	5
2.9 SB Technical Adequacy Assessment .....	5
2.10 DOE-HQ Office of Science Independent SB Assessment of BJC and DOE-ORO.....	5
2.11 DOE-HQ EM Review of the Oak Ridge M&I Contract.....	6
2.12 Issue Determination.....	6
3.0 ROOT CAUSE ANALYSIS .....	8
3.1 DOE Root Cause .....	8
3.2 BJC Root Cause.....	12
4.0 DOE-ORO/BJC IMPROVEMENTS PROJECT APPROACH AND CAP DEVELOPMENT.....	17
4.1 DOE-ORO/BJC ISMS Improvements Project .....	17
4.2 DOE-ORO and BJC CAP Development .....	19
5.0 CORRECTIVE ACTION PLAN.....	20
5.1 SB Corrective Actions.....	21
5.2 DOE Orders of Interest.....	49
5.3 Technical Competence .....	54
5.4 ISMS Corrective Actions .....	60
6.0 PERFORMANCE MONITORING AND IMPROVEMENTS.....	64
Appendix A, DOE-ORO Corrective Actions in Response to the Independent SB Assessment of BJC and DOE-ORO.....	A-1

Appendix B, BJC Corrective Actions in Response to the Independent SB Assessment of BJC and DOE-ORO.....	B-1
Appendix C, BJC Corrective Actions in Response to the DOE-HQ, DOE-ORO and BJC Assessments of BJC and DOE-ORO .....	C-1

## FIGURES

Figure ES-1, Corrective Action Development Overview .....	x
Figure 2.1, Weaknesses Identified in DOE-ORO and BJC ISMS .....	7
Figure 2.2, Improvements to Core Functions Reflected by Corrective Actions.....	7
Figure 4.1, Integrated DOE/BJC ISMS Project Teams .....	18
Figure 5.1, Confirm Nuclear Facility SB for Operations .....	25
Figure 5.2, Evaluation of Orders of Interest .....	51
Figure 5.3, Training and Qualification Improvements Process .....	55
Figure 5.4, BJC ISMS Improvements.....	60
Figure 6.1, The Path Forward to ISMS Continuous Improvements .....	65

## TABLES

Table 4.1, DOE-ORO and BJC Corrective Action Development Guidance .....	19
Table 5.0, Crosswalk from Root Causes to Corrective Action Tables .....	21
Table 5.1, Summary of Immediate Corrective Actions Initiated or Completed by DOE-ORO .....	23
Table 5.2, Summary of Immediate Corrective Actions Initiated or Completed by BJC .....	24
Table 5.3, ORO Corrective Actions for SB Improvements .....	26
Table 5.4-1, BJC Corrective Actions for Nuclear Facility Safety Assessments.....	30
Table 5.4-2, BJC Corrective Actions for SMP Improvements .....	33
Table 5.4-3, BJC Corrective Actions for SB Process Improvements .....	41
Table 5.4-4, BJC Corrective Actions for SB Updates and Upgrades .....	46
Table 5.5, ORO Corrective Actions for WSS.....	52
Table 5.6, BJC Corrective Actions for WSS .....	53
Table 5.7, ORO Corrective Actions for Technical Competence .....	56
Table 5.8, BJC Corrective Actions for Technical Competence.....	58
Table 5.9, ORO Corrective Actions for ISMS Improvements .....	61
Table 5.10, BJC Corrective Actions for ISMS Improvements .....	63

## ACRONYMS

AB	Authorization Basis
AEMD	Assessments and Emergency Management Division
AHA	Activity Hazards Analysis
AM	Assistant Manager
AMAU	Assistant Manager for Assets Utilization
AMEM	Assistant Manager for Environmental Management
AMESH	Assistant Manager for Environment, Safety and Health
AML	Assistant Manager for Laboratories
ARF	Alternate Release Fraction
ASA	Auditable Safety Analysis
BIO	Basis of Interim Operation
BJC	Bechtel Jacobs Company LLC
CAAS	Criticality Accident Alarm System
CAP	Corrective Action Plan
CATS	Corrective Action Tracking System
CCR	Competence Commensurate with Roles and Responsibilities
COR	Contracting Officers Representative
D&D	Decontamination and Decommissioning
DMSA	DOE Material Storage Area
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EM	Environmental Management
EMHA	Emergency Management Hazard Analysis
ES&H	Environment, Safety and Health
ETTP	East Tennessee Technology Park
FATCAT	Facility Authorization Tool-Container Analysis Tool
FHA	Fire Hazards Analysis
FM	Facility Manager
FP	Fire Protection
FP&EM	Fire Protection and Emergency Management
FPEA	Fire Protection Engineering Assessment
FR	Facility Representative
FRAM	Functions, Roles, and Accountability Matrix
FSAR	Facility Safety Analysis Report
HEPA	High Efficiency Particulate Air
HMIS	Hazardous Materials Inventory System
HQ	Headquarters
I/CATS	Issues/Corrective Action Tracking System
IH	Industrial Hygiene
IMS	Issues Management System
INPO	Institute of Nuclear Power Operations
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
M&I	Management and Integration
MOP	Manager of Projects
MSRE	Molten Salt Reactor Experiment
NCS	Nuclear Criticality Safety

NFPA	National Fire Protection Association
NSD	Nuclear Safety Division
NTS	Noncompliance Tracking System
OFI	Opportunities for Improvement
ORION	Oak Ridge Issues and Open Actions System
ORO	Oak Ridge Operations
OSR	Operational Safety Requirements
P/QA	Performance/Quality Assurance
PIP	Performance Improvement Project
R/CAAS	Radiation/Criticality Accident Alarm System
RF	Release Fraction
S&M	Surveillance and Maintenance
SAR	Safety Analysis Report
SB	Safety Basis
SBRB	Safety Basis Review Board
SER	Safety Evaluation Report
SF&EM	Security, Fire and Emergency Management
SME	Subject Matter Expert
SMP	Safety Management Program
SSC	Systems, Structures and Components
TQ	Threshold Quantities
TQP	Training and Qualifications Program
TSR	Technical Safety Requirements
UOSV	Uranium Oxide Storage Vault
USEC	United States Enrichment Corporation
USQD	Unreviewed Safety Question Determination
WSS	Work Smart Standards



## EXECUTIVE SUMMARY

This Corrective Action Plan (CAP) has been prepared to summarize key actions taken by the U.S. Department of Energy (DOE) Oak Ridge Operations (ORO) Office and Bechtel Jacobs Company LLC (BJC), and to present plans developed to address Integrated Safety Management (ISM) issues cited by the Defense Nuclear Facilities Safety Board (DNFSB) letter of October 15, 2001 from DNFSB Chairman John Conway to Under Secretary of Energy Robert Card. In that letter, the DNFSB identified areas of concern associated with the development of and adherence to Authorization Basis (AB), the absence of nuclear safety orders from the Management and Integration (M&I) Contract Work Smart Standards (WSS) list, the lack of clear definition and competence to execute roles and responsibilities within both DOE-ORO and BJC, and indications that the Integrated Safety Management System (ISMS) of DOE-ORO and BJC are not functioning, especially in the area of feedback and improvement. Subsequently, the DOE-ORO Manager issued a letter on November 1, 2001 revoking the verification of the DOE-ORO and BJC ISMS that had been completed in November 2000.

### DETERMINATION OF NATURE AND EXTENT OF CONDITION

DOE-ORO and BJC had implemented a number of actions to upgrade the existing environmental management (EM) safety basis (SB) documents for compliance with 10 CFR 830 Subpart B. Following the DNFSB October 15, 2001 letter, additional actions were initiated, including several assessments by DOE-Headquarters (HQ), DOE-ORO, and BJC management to more accurately determine the nature and extent of the identified areas of concern. The assessment results were utilized to further define the issues and facilitate causal factor identification, including root causes. The assessments identified findings and issues requiring a number of compensatory measures and corrective actions to ensure that no imminent threats to workers, the public, or the environment existed. Key actions and assessments include:

- **EM SB 10 CFR 830 Compliance Review** – This was completed by BJC on April 9, 2001. This report concluded that none of the existing EM SBs were in full compliance with the new rule. BJC submitted initial and revised upgrade implementation plans in August 2001, and December 2001, respectively.
- **BJC Noncompliance Tracking System (NTS) Report** – Issued by BJC on October 5, 2001, this report considered a series of occurrence reports related to SB implementation and included a broad and systematic root cause analysis to identify corrective actions associated with BJC nuclear safety program implementation. This NTS report subsequently has been revised to reflect the findings from a DOE-HQ independent assessment, a BJC management assessment, and a joint DOE-ORO and BJC technical adequacy assessment.
- **DOE-ORO and BJC Evaluation of Orders of Interest to the DNFSB** – DOE-ORO and BJC performed detailed analyses of the list of 109 orders attached to the October 15, 2001 letter. The analyses determined that 25 of the directives warranted further consideration for incorporation into the BJC contract. DOE-ORO is currently processing these changes through their directives management program and subsequent modifications to the BJC contract. DOE-ORO directed the addition of four orders to the BJC contract on February 28, 2002.
- **BJC SB Flowdown Assessment and DOE-ORO Independent Verification** – BJC completed comprehensive assessments of SB documents and the flowdown of requirements from these documents to facility operations. The assessments involved all BJC Category 2 and 3 nuclear facilities, with 28 assessment reports issued. DOE-ORO subsequently performed an independent review of the BJC assessment, including field verifications, to determine that the operations reviewed were adequately bounded by their existing SB, and that compensatory measures were in place where appropriate.

- **DOE-ORO/BJC SB Technical Adequacy Assessment** – DOE-ORO and BJC completed a joint review of a select group of 15 nuclear facilities to determine the adequacy of the SBs hazards and accident analyses. In general, the assessment concluded that the SBs 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 SB-identified controls have been appropriately flowed down to procedures or Operational Safety Requirements (OSRs)/Technical Safety Requirements (TSRs). Necessary compensatory measures were put in place where appropriate.
- **DOE-HQ Office of Science Independent SB Assessment of BJC and DOE-ORO** – During December 2001 and January 2002, a DOE-HQ team performed an independent assessment and reviewed SB documents for all ORO EM Category 2 and 3 nuclear facilities. The independent assessment report was issued on January 31, 2002 and identified 20 findings and 46 associated recommendations for improvements to DOE-ORO and BJC nuclear safety systems and processes for managing nuclear facilities under the ORO EM program. The assessment team reported that there had been a systemic break down in nuclear safety management systems and processes within DOE-ORO and BJC. The report stated that the principal contributing factor for this breakdown was a lack of management priority and accountability for nuclear safety within DOE-ORO and BJC. The assessment team found that BJC and subcontractor operations personnel were generally aware of hazards and controls and that a number of program improvements were underway. The report concluded that upgrading the SB program in the near term and re-evaluation of the previously submitted 10 CFR 830 Subpart B compliance plan should help resolve the TSRs, OSRs, and SB hazard and accident analysis concerns.

The results of the BJC management assessments and compensatory measures implemented were summarized in a letter issued by BJC to DOE-ORO (Reference: P.F. Clay, BJC to L. Fritz, DOE-ORO, "Actions to Determine Safety of Ongoing Bechtel Jacobs Company LLC Environmental Management Operations", dated March 4, 2002). DOE-ORO subsequently issued a report of their independent verification of the BJC assessments on March 15, 2002 (Reference: G. L. Dever, DOE-ORO to J. F. Decker, SC-1, "Determination for Continued Operations of Environmental Management Facilities Operations", dated March 15, 2002). In an April 4, 2002 letter, L. Fritz to P.F. Clay, "Determination for Continued Operations of Environmental Management Facilities Operation," DOE-ORO directed that two additional compensatory measures be implemented and that four corrective actions be addressed. Collectively, the assessments and compensatory measures have established the basis to assure safe operations.

## ISSUE DEFINITION

Major issues were identified and subjected to further analysis to determine causal factors and root causes:

- Inadequate SB authorization and management system for Assistant Manager for Environmental Management (AMEM) nuclear facilities managed by BJC. (DOE)
- Development, maintenance, and implementation of SB documents have not been managed to consistently assure adequate implementation. (BJC)
- DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS. (DOE and BJC)
- Inadequate technical expertise in ORO to manage the SB for nuclear facilities. (DOE)
- Sufficient technical expertise is not in place to accomplish responsibilities required by the SB for nuclear facilities. (BJC)
- A rigorous program has not been maintained to ensure that competencies are commensurate with roles and responsibilities. (BJC)
- Declaration of ISMS may have been premature. (DOE)

- Feedback and improvement process has not been fully effective to ensure an expected degree of ISM maturity. (BJC)
- ISM implementation by BJC failed to adequately assure ongoing effectiveness and continuous improvement. (BJC)

## **ROOT CAUSE ANALYSIS**

The DOE-ORO and BJC independent and self-assessments confirmed the DNFSB observations and identified a number of weaknesses in ISMS implementation. In some cases, the issues were common to both the DOE-ORO and BJC organizations. DOE-ORO and BJC performed a systematic analysis of issues identified in the independent HQ assessment, in the NTS report, and in the additional DOE-ORO/BJC assessments and reviews. The findings, observations, conclusions, and recommendations from these assessments were evaluated by the DOE-ORO/BJC ISMS Improvement Project Team leaders and technical support staff. The evaluation team included personnel trained in TapRoot, Barrier, Fault Tree, Kepner-Trego, and other root cause methods designed to obtain and analyze data necessary to understand relevant causal factors and institute sustained improvements.

The root causes are:

- The DOE-ORO and BJC processes and organizational alignment for management of AB documents have not been fully integrated, nor well documented.
- The WSS process failed to identify an adequate set of nuclear safety standards.
- The BJC training and qualification for personnel involved in nuclear facility operations did not meet the expectations of DOE Order 5480.20A, which was not included in the BJC contract.
- The ORO belief that the nuclear safety risks for the BJC work were not significant.
- Lack of management accountability and consequences for not having approved SB documents.
- The maintenance of ISMS was not effective.
- Lack of management priority and accountability for closing the ISM system deficiencies.

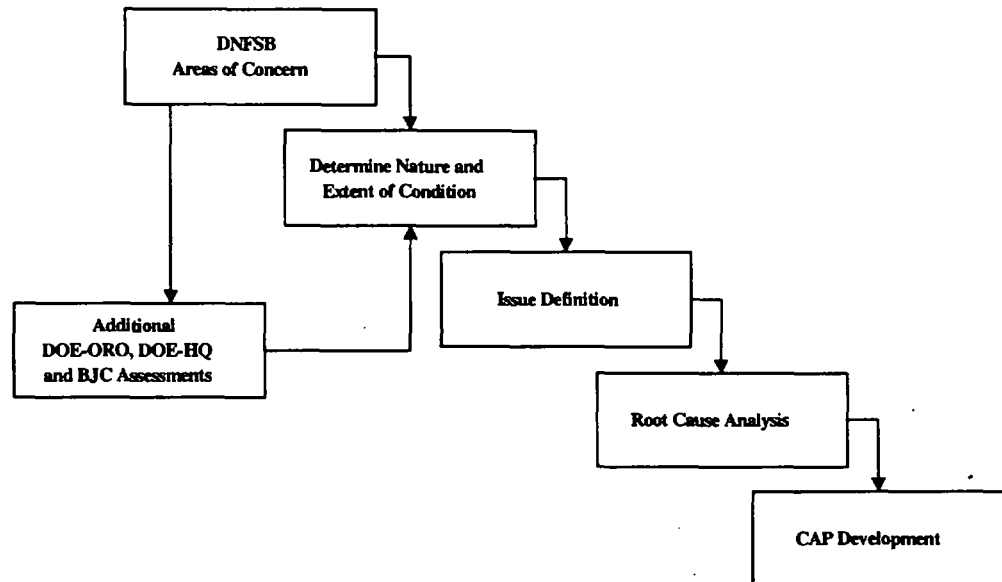
## **DOE-ORO/BJC IMPROVEMENTS PROJECT CAP APPROACH AND DEVELOPMENT**

Based on the causal factors, DOE-ORO and BJC initiated a comprehensive ISMS Improvements Project and developed this integrated CAP. The overall objectives include ensuring that all causal factors are addressed and corrective actions are integrated, that actions are effective and institutionalized in both the DOE-ORO and BJC organizations to prevent recurrence of the issues, and that appropriate priorities are established for the follow-up actions. Considering the breadth of the issues the DOE-ORO/BJC project team elected to utilize the four areas of concern highlighted in the DNFSB October 15, 2001 letter as a basis for capturing all of the issues, observations, and findings from the assessments. Four task teams were established to initiate corrective action development for issues under each of the following areas:

- SB Improvements
- DOE Orders of Interest to the DNFSB
- Technical Competence/Training/Qualifications/Staffing
- ISMS Improvements

The project team developed this CAP to reflect the synthesis of issues resulting from multiple assessments, to incorporate the plan to upgrade all of the SBs for EM facilities, and to establish SB process improvements which will be institutionalized via DOE-ORO and BJC policies, procedures, and documented corporate expectations. The outline for this CAP was based on guidance provided in a letter from the Assistant Secretary for EM to Field Office Managers, *Policy for Content and Implementation of Corrective Action Plans (CAP)*, dated October 4, 2001 which sets policy on expected content of CAPs. Figure ES-1 depicts the overall CAP development approach.

**Figure ES-1 Corrective Action Development Overview**



## CORRECTIVE ACTIONS

As the assessments and reviews were completed, compensatory measures were implemented where needed to assure the safety of ongoing operations. Initial actions and compensatory measures included:

- Implementation of facility-specific compensatory measures or operational limitations where needed to assure continued safe operations for all DOE-ORO EM nuclear facilities.
- Completion by BJC of comprehensive flowdown assessments for all nuclear facilities to identify any concerns related to technical adequacy, flowdown of requirements, implementation, and compliance.
- Completion by DOE-ORO of an independent verification of essential facilities SB flowdown assessments performed by BJC.
- Completion of a joint DOE-ORO BJC technical adequacy review of SB hazards and accident analyses for 15 representative facilities.
- Revocation of DOE-ORO and BJC ISMS verification and initiation of planning for a comprehensive re-verification of ISMS programs, including management systems beyond SB.
- Allocation of additional experienced resources to supplement DOE-ORO and BJC staff in the performance of essential nuclear safety functions.
- Modifications of the M&I contract for areas where gaps in the WSS were identified.

A summary of the issues, root causes, causal factors and corrective actions is provided in Section 5.0. Detailed information sheets regarding assigned responsibilities, schedules, and closure documentation are found in the Appendices. The corrective actions are presented in several formats for clarity and utility throughout this document.

## **PERFORMANCE MONITORING AND IMPROVEMENTS**

DOE-ORO and BJC actions to assure CAP implementation include those to monitor implementation of corrective actions and those to assess effectiveness of implemented actions. CAP implementation progress will be monitored through monthly reporting of action status and due dates. DOE-ORO and BJC will review trend analysis data each month and will prepare a monthly status report on CAP implementation. Principal actions to assess the effectiveness of implemented corrective actions include:

- Corrective action process improvements, utilizing Institute of Nuclear Power Operations (INPO) guidelines.
- Trend analysis process improvements, utilizing Six Sigma tools.
- The independent assessment process will continue to be used to evaluate the adequacy and effectiveness of DOE-ORO and BJC programs and their implementation. These independent assessments routinely evaluate the effectiveness of implemented corrective actions in areas being assessed.
- An independent external evaluation of BJC ISMS readiness will be performed by BJC prior to BJC certification to DOE-ORO of BJC readiness for DOE re-verification of the BJC ISMS.
- The DOE verification review of the ORO and BJC ISMS will provide the final measure of the adequacy and effectiveness of CAP implementation in correcting and preventing reoccurrence of the SB, ISMS, WSS, and technical competence issues addressed in this CAP.

DOE-ORO and BJC also anticipate that the DOE Office of Independent Oversight will periodically review the progress of corrective action closure and effectiveness.

## **OVERALL CAP OBJECTIVE**

This CAP presents more than 100 corrective actions to address specific issues, findings, and observations cited by the DNFSB, the DOE-HQ Independent SB Assessment, DOE-ORO assessments and BJC self assessments. However, DOE-ORO and BJC have focused the actions collectively to attain an overall objective. DOE-ORO and BJC view the completion of this CAP as an opportunity to realize significant improvements to their respective nuclear safety and ISM programs. The overall objective is to assure the protection of the public, workers, and environment through implementation of technically adequate and 10 CFR 830 Subpart B-compliant SB documents, tailored to current missions and hazards, with an effective, enabling ISMS and supporting Safety Management Programs (SMPs).

## 1.0 INTRODUCTION

This CAP presents a summary of plans and key actions taken by the DOE-ORO Office and BJC in response to ISM issues cited by the DNFSB letter of October 15, 2001 from Chairman Conway to Under Secretary Card. In that letter, the DNFSB identified areas of concern associated with the development of and adherence to AB, the absence of nuclear safety orders from the M&I Contract WSS, the lack of clear definition and competence to execute roles and responsibilities within both DOE-ORO and BJC, and indications that the ISMS of DOE-ORO and BJC are not functioning, especially in the area of feedback and improvement. Subsequently, the DOE-ORO Manager, on November 1, 2001, revoked the verification of the DOE-ORO and BJC ISMS that had been completed in November 2000.

DOE-ORO and BJC had implemented a number of actions to upgrade the existing EM SB documents for compliance with 10 CFR 830 Subpart B, and to address previously identified SB issues. Following the DNFSB letter, additional actions were undertaken, including several assessments by DOE-HQ, DOE-ORO, and BJC management. The assessments resulted in additional issues and findings, which were utilized to clarify the identification of causal factors.

The DOE-ORO and BJC independent and self-assessments confirmed the DNFSB observations and identified a number of weaknesses in ISMS implementation. In some cases, the issues were common to both the DOE-ORO and BJC organizations. This led DOE-ORO and BJC to establish a joint project team to evaluate the issues, implement any necessary compensatory measures, and begin the corrective action development process. The objective was to ensure that cross-cutting issues were addressed effectively and that process improvements would be complementary.

DOE-ORO assigned the Deputy Manager for Operations and BJC assigned the Vice President and General Manager to lead and integrate the project team. Because the issues readily roll up to the four areas of concern cited by the DNFSB, the project team organized four task teams and initiated corrective action development to align with these issues.

This CAP presents more than 100 corrective actions to address specific issues, findings, and observations cited by the DNFSB, the DOE-HQ Independent SB Assessment, DOE-ORO assessments and BJC self assessments. However, DOE-ORO and BJC have focused the actions collectively to attain an overall objective. DOE-ORO and BJC view the completion of this CAP as an opportunity to realize significant improvements to their respective nuclear safety and ISM programs. The overall objective is to assure the protection of the public, workers, and environment through implementation of technically adequate and 10 CFR 830 Subpart B-compliant SB documents, tailored to current missions and hazards, with an effective, enabling ISMS and supporting SMPs.

The CAP integrates corrective actions identified for both DOE-ORO and BJC. Both organizations have undertaken actions that are interdependent to strengthen programmatic areas and improve processes relative to managing EM nuclear facilities. The CAP is organized as follows:

**SECTION 2.0, DETERMINATION OF NATURE AND EXTENT OF CONDITION** provides an overview of the various assessments that have been utilized to identify the issues, causal factors, and findings upon which this CAP is based.

**SECTION 3.0, ROOT CAUSE ANALYSIS** presents the root cause analysis performed by DOE-ORO and BJC. Since the issues are systemic for major program areas, the root cause analysis and ensuing corrective action development have been organized and presented to align with the four principal areas of concern identified in the October 15, 2001 DNFSB letter: SB; DOE Orders of Interest and WSS; Technical Competence; and ISMS Improvements.

**SECTION 4.0, DOE-ORO/BJC IMPROVEMENTS PROJECT APPROACH AND CAP DEVELOPMENT** describes how the CAP was developed, including organization of DOE-ORO and BJC integrated project teams, and the approach to identifying corrective actions to address the root cause and causal factors

**SECTION 5.0, CAP** presents a summary of the corrective actions and provides a crosswalk to the DNFSB areas of concern, issues, causal factors, and root causes identified.

**SECTION 6.0, PERFORMANCE MONITORING AND IMPROVEMENTS** describes the approach to monitoring corrective action closure and the effectiveness of the corrective action implementation.

**APPENDICES A, B, and C** provide detailed information on each corrective action which will be tracked to closure by DOE-ORO and BJC.

## **2.0 DETERMINATION OF NATURE AND EXTENT OF CONDITION**

The integrated DOE-ORO/BJC project team was established to provide leadership and set priorities for the four task teams to ensure necessary actions are taken to improve DOE-ORO and BJC ISMS performance. One objective of the integrated project team was to consolidate the issues resulting from the DNFSB areas of concern and subsequent independent and management assessments. Each of these assessments has generated issues and findings, which assisted in causal factor identification. The sources of the various issues requiring corrective actions are briefly summarized below to provide some additional perspective for the scope of this CAP. The DOE-ORO corrective actions will be tracked to closure by ORO staff in the Oak Ridge Issues and Open Actions System (ORION). The BJC corrective actions will be tracked in the BJC Issues/Corrective Action Tracking System (I/CATS).

### **2.1 EM SB 10 CFR 830 COMPLIANCE REVIEW**

In response to a January 10, 2001 memorandum from the DOE Assistant Secretary for EM, DOE-ORO and BJC undertook an assessment to determine the extent to which the existing SB for all EM Category 2 and Category 3 nuclear facilities complied with the requirements of 10 CFR 830 Subpart B. On April 9, 2001 BJC submitted a report to DOE-ORO EM, concluding that none of the existing SB documents were in full compliance with the new rule.

BJC subsequently prepared and submitted to DOE-ORO on August 22, 2001 a plan and schedule to revise the safety documents for compliance with 10 CFR 830 Subpart B requirements by April 10, 2003. The most recent update to the implementation plan was submitted to DOE-ORO on April 5, 2002.

### **2.2 BJC NTS REPORT**

In September 2001, the DNFSB staff raised questions regarding the adequacy of the SB document and associated implementing procedures for the Depleted Uranium Oxide Storage Vault Facility (UOSV) managed by BJC for the DOE-ORO EM program at the Y-12 site. Evaluation of these concerns resulted in the issuance of occurrence report ORO—BJC-Y12WASTE-2001-0010, "Potential Unreviewed Safety Question Concerning Oxide Storage Vaults at Y-12 Site" on September 19, 2001. Further, BJC issued NTS report NTS-ORO—BJC-BJCPM-2001-0004, "Inadequacy in Safety Authorization Basis Management" on October 5, 2001. Concurrent with the implementation of several compensatory measures, BJC completed a root cause analysis and defined required corrective actions. An update of the root cause analysis and corrective actions was submitted on April 12, 2002 to address the findings and observations from the subsequent DOE and BJC assessments.

### **2.3 DNFSB LETTER OF OCTOBER 15, 2001**

On October 15, 2001 DNFSB Chairman John Conway issued a letter to DOE Under Secretary Robert Card resulting from a DNFSB staff review of defense nuclear facilities operated by BJC. In that letter, the DNFSB questioned: 1) the adequacy of the AB and safety posture for ORO EM nuclear facilities managed by BJC; 2) the rationale for DOE requirements not included in the WSS set of the BJC contract; 3) the effectiveness of ISMS implementation by DOE-ORO and BJC; and, 4) the adequacy of the technical expertise in ORO to manage the AB for nuclear facilities.

DOE-ORO and BJC formed an integrated project team and initiated corrective action development under each of the DNFSB four areas of concern. Foremost was the joint effort by DOE-ORO and BJC to confirm the adequacy of the current SB for ongoing operations of the EM Category 2 and 3 nuclear facilities. This included an initial qualitative assessment of facility safety completed on



December 5, 2001 followed by detailed assessments by BJC and a subsequent independent verification by DOE-ORO. These assessments resulted in the implementation of several facility-specific compensatory measures, pending completion of more detailed facility assessments. For example, DOE-ORO suspended fissile material handling at the East Tennessee Technology Park (ETTP) pending upgrades to the SB documentation for the Radiation/Criticality Accident Alarm System (R/CAAS).

#### **2.4 BJC EXECUTIVE MANAGEMENT ASSESSMENT BY OUTSIDE EXPERTS**

During November 2001, BJC utilized the services of ISMS/SB experts Paul Rice and Phil Hildebrandt to assist in developing the management framework and causal factor identification for overall ISMS improvements. They conducted interviews with DOE-ORO and BJC senior managers, reviewed program policies and procedures, and met several times with the DNFSB Site Representative. They also reviewed the immediate corrective actions initiated, assisted in causal factor analysis, and made recommendations for additional assessment and analysis. Subsequently, the overall corrective action framework was developed, leading to the establishment of an integrated DOE-ORO/BJC ISMS Improvements Project Team.

#### **2.5 DOE-ORO MANAGER REVOCATION OF DOE-ORO AND BJC ISMS VERIFICATION**

Due to concerns about the maturity of the DOE-ORO and BJC ISMS, the ORO Manager revoked the November 2000 verification of both the ORO and BJC ISMS on November 1, 2001. The ISMS verification in 2000 had identified a number of opportunities for improvement (OFIs) for DOE-ORO and BJC for which corrective actions were developed. Both DOE-ORO and BJC performed an assessment of the previous OFIs and respective corrective actions to determine effectiveness and to identify actions needed to achieve further improvements. These assessments led to the identification of causal factors related to trend analysis and corrective action closures. Further, both DOE-ORO and BJC management have undertaken corrective actions related to ISMS implementation, as reflected in this CAP.

#### **2.6 DOE-ORO AND BJC EVALUATION OF ORDERS OF INTEREST TO THE DNFSB**

In response to questions regarding the BJC M&I contract WSS, DOE-ORO and BJC evaluated the 109 orders of interest to the DNFSB (attached to the October 15, 2001 letter). The directives were categorized by the need for further consideration to determine the appropriateness of incorporation in the BJC contract. The evaluation determined that 25 of the directives warranted further analysis. Of these 25 directives, the requirements of 14 are already in the BJC contract, although not specifically cited. Four of the 25 directives were incorporated immediately into the BJC contract as directed by DOE-ORO letter of January 28, 2002. The remaining orders have undergone detailed analysis via the established DOE-ORO directives management process, with actions underway to modify the contract where needed.

#### **2.7 BJC BASELINE ASSESSMENT OF TRAINING AND QUALIFICATIONS FOR NUCLEAR FACILITIES MANAGEMENT**

On January 15, 2002, BJC completed a baseline program assessment of training and qualification requirements, focusing on facility-specific requirements for nuclear facilities. The assessment determined that position/facility specific requirements are not included in present training position descriptions and recommended several corrective actions to implement a qualification program for personnel supporting nuclear and radiological facilities. These actions are reflected in this CAP. Concurrently, DOE Order 5480.20A, "Selection, Qualification and Training of Personnel at DOE Nuclear Facilities" has been incorporated into the BJC contract by the January 28, 2002 letter referenced in Section 2.6.

## **2.8 BJC SB FLOWDOWN ASSESSMENT AND DOE-ORO INDEPENDENT VERIFICATION**

From late October 2001 to early February 2002, BJC completed comprehensive assessments of SB documents and the flowdown of requirements from these documents to facility operations. The SB Flowdown Assessments involved all BJC category 2 and 3 nuclear facilities, with 28 separate assessment reports issued. The following areas were reviewed: facility hazard classification; flowdown of safety requirements to procedures; field implementation of SB related requirements; implementation of SMPs; knowledge, training, and qualifications of facility management responsible for maintaining operations in accordance with SB controls; and flowdown of requirements to subcontractors. Findings and observations from these assessments have been entered into the BJC I/CATS and corrective actions will be tracked to completion.

On March 15, 2002, the Manager of ORO issued a memorandum summarizing the results of an independent review of BJC key operations in ten Category 2 and 3 facilities. The ORO review included field verifications of the BJC SB Flowdown Assessment. The results of the review indicated that the operations reviewed were adequately bounded by their existing SB and should continue contingent on implementation of additional identified compensatory measures. These compensatory measures and four additional corrective actions were identified in written correspondence to BJC from the respective DOE Contracting Officer's Representatives.

## **2.9 SB TECHNICAL ADEQUACY ASSESSMENT**

In response to a concern cited in the DOE-HQ Independent SB Assessment, DOE-ORO and BJC completed a joint review of a representative group of 15 nuclear facilities (based on operating status, critical mission, and hazard/risk potential) to determine the adequacy of the SB hazards and accident analyses. This included assessing the SB for completeness of the postulated accident list, reviewing technical adequacy of analysis, and assuring that key analysis assumptions were translated into controls. In general, the assessment concluded that the SBs 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 SB identified controls have appropriately flowed down to procedures or OSR/TSR. Several immediate compensatory measures were implemented. The review also identified seven facility conditions requiring further analysis. In addition, a number of improvements were recommended for incorporation in the upgrade of the documents for 10 CFR 830 compliance. The report of this assessment was issued on March 1, 2002. Findings and observations from these assessments have been entered into the BJC I/CATS and corrective actions will be tracked to completion.

On March 4, 2002, the Vice President and General Manager of BJC issued a letter to DOE-ORO summarizing the results of the SB Flowdown and Technical Adequacy assessments. The letter summarized compensatory measures and actions implemented by BJC to that date.

## **2.10 DOE-HQ OFFICE OF SCIENCE INDEPENDENT SB ASSESSMENT OF BJC AND DOE-ORO**

During December 2001 and January 2002, a DOE-HQ team performed an independent assessment and reviewed SB documents for all ORO EM Category 2 and 3 nuclear facilities. This assessment was commissioned by the DOE Acting Principal Director of the Office of Science to fulfill a request in the DNFSB letter of October 15, 2001. Nuclear safety procedures and other related documents, such as the WSS, were also reviewed, and interviews were conducted with numerous ORO and BJC managers and personnel and with the DNFSB site representative. The independent assessment report was issued on January 31, 2002 and identified 20 findings and 46 associated recommendations for

improvements to DOE-ORO and BJC nuclear safety systems and processes for managing nuclear facilities under the ORO EM program. The assessment team reported that there had been a systemic break down in nuclear safety management systems and processes within DOE-ORO and BJC. The principal contributing factor for this breakdown was identified as a lack of management priority and accountability for nuclear safety within DOE-ORO and BJC. The assessment team found that BJC and subcontractor operations personnel were generally aware of hazards and controls and that a number of program improvements were underway. The HQ team determined that there is no imminent risk to the public or workers from readily releasable nuclear materials. The report concluded that upgrading the SB 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 SB hazard and accident analysis concerns. The corrective actions for recommendations in the independent assessment report are incorporated into this CAP.

## **2.11 DOE-HQ EM REVIEW OF THE OAK RIDGE M&I CONTRACT**

During the period February 11-15, 2002 a team from DOE-HQ EM performed a review of the M&I contract to ensure the contract provides DOE the mechanisms for communicating performance objectives and expectations to the contractor for cost, scope, schedule, and ISM. The review team examined incentives and work definition; operations and research; work authorization, incentives, and contract modifications; hazard requirements for contract control; and DOE policy and directives. The review team concluded that the M&I 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 ISM are communicated. However, the team concluded that improvements in contract execution are warranted. The DOE-ORO corrective actions in response to this review are being addressed separately from this CAP, because they involve potential procurement-sensitive prime contract changes.

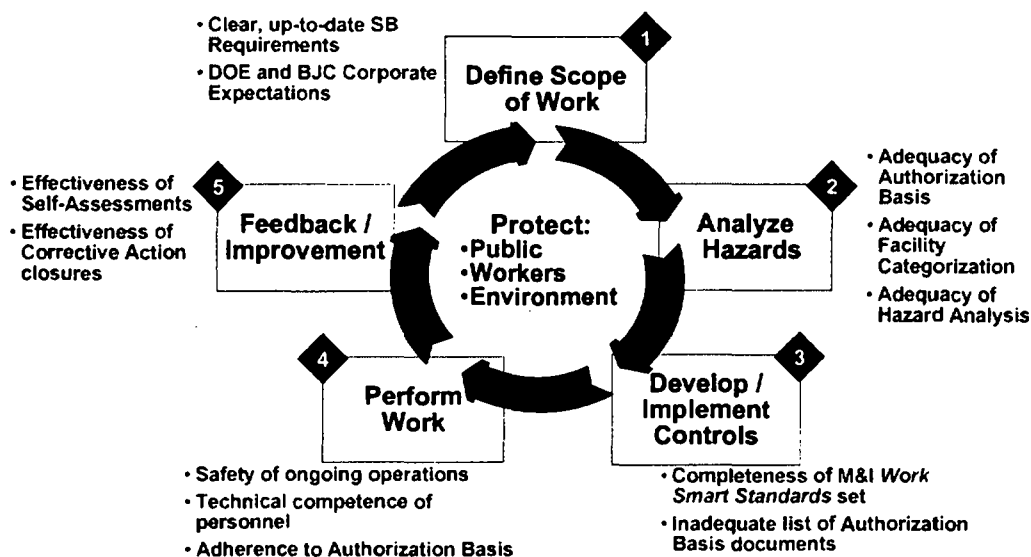
## **2.12 ISSUE DETERMINATION**

The DOE-ORO/BJC project team applied ISM principles to categorize issues by the most applicable core function and/or guiding principles of the ISMS. The results of the ISM analysis are shown in Figures 2.1 and 2.2.

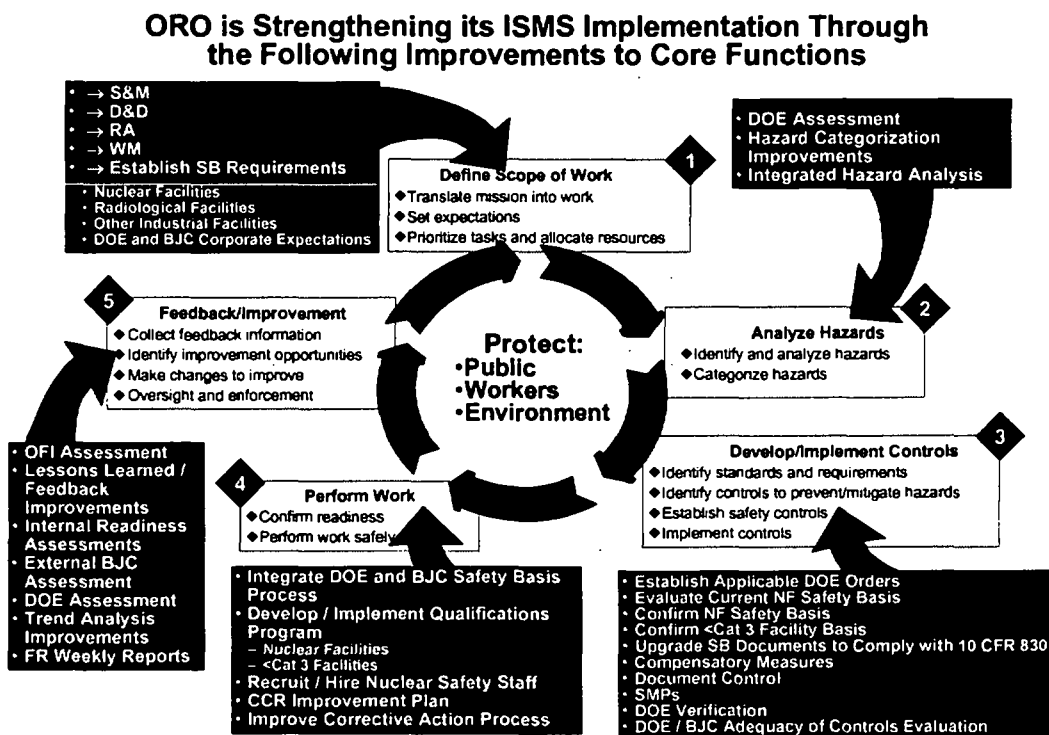
Major issues were identified and subjected to root cause analysis, as described in Section 3.0.

- Inadequate SB authorization and management system for AMEM nuclear facilities managed by BJC. (DOE)
- Development, maintenance, and implementation of SB documents have not been managed to consistently assure adequate implementation. (BJC)
- DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS. (DOE and BJC)
- Inadequate technical expertise in ORO to manage the SB for nuclear facilities. (DOE)
- Sufficient technical expertise is not in place to accomplish responsibilities required by the SB for nuclear facilities. (BJC)
- A rigorous program has not been maintained to ensure that competencies are commensurate with roles and responsibilities. (BJC)
- Declaration of ISMS may have been premature. (DOE)
- Feedback and improvement process has not been fully effective to ensure an expected degree of ISM maturity. (BJC)
- ISM implementation by BJC failed to adequately assure ongoing effectiveness and continuous improvement. (BJC)

**Figure 2.1 Weaknesses Identified in DOE-ORO and BJC ISMS**



**Figure 2.2 Improvements to Core Functions Reflected by Corrective Actions**



## 3.0 ROOT CAUSE ANALYSIS

This section describes the DOE-ORO BJC root cause analyses. These root causes address: areas of concern raised in the DNFSB October 15, 2001 letter to DOE from the DNFSB; and findings and causal factor identification from subsequent DOE and BJC assessments of operations of nuclear facilities summarized in Section 2.0.

### 3.1 DOE ROOT CAUSE

In addition to root causes and contributing factors associated with the four DNFSB Areas of Concern, the ORO Root Cause Analysis resulted in additional recommendations that are being listed as Findings in this CAP with corrective actions. (See Findings #ORRC1 and #ORRC2)

#### 3.1.1 DOE SB Root Cause Analysis

##### Problem Statement

Inadequate SB authorization and management system for AMEM nuclear facilities managed by BJC.

##### Problem Definition and Background

DOE-ORO reviewed the implementation of BJC's ISMS in February 2000. That review identified numerous issues associated with the development of and adherence to AB, and the absence of nuclear safety orders from the WSS and the BJC contract. In October 2000, DOE-ORO conducted a follow-up review that closed 40 of the 50 original findings, but identified 25 more, many of which related to the same areas identified in the February 2000 review. At that time the ISMS process was approved with expectation that both DOE-ORO and BJC would demonstrate continuous improvement.

In October 2001, the DNFSB conducted a review of defense nuclear facilities operated by BJC and found that many of the deficient conditions remained uncorrected. Consequently, the DNFSB requested a DOE-HQ independent assessment of the AB and safety posture for each of the BJC defense nuclear facilities. The assessment was conducted December 2001 – January 2002, and identified numerous deficiencies regarding DOE-ORO and BJC SB authorization and approval processes. According to the DOE-HQ assessment report issued by Dae Chung, assessment team leader, "a systemic breakdown was found in nuclear safety management systems and processes within both ORO and BJC." Specifically, the assessment team noted the following:

1. Technical deficiencies in the development, review, and maintenance of SB documents.
2. No functioning systems in place within BJC or ORO for SB document control, receipt, or tracking.
3. No ORO wide procedure in place for review and approval of SB documents.
4. No ORO Corrective Action Tracking System (CATS) to monitor and ensure closeout of assessment deficiencies.
5. Inadequate technical resources within AMEM and Assistant Manager for Environment, Safety and Health (AMESH) for review, approval, and oversight of nuclear facility SB documents in a timely manner.
6. Lack of management priority, accountability, and structured process to ensure nuclear safety issues are raised to the DOE-ORO Manager.

### Contributing Factors

- CF/ORSB-1 Exclusion of applicable DOE nuclear safety requirements in the BJC contract.
- CF/ORSB-2 No consequences for not having an approved SB document.
- CF/ORSB-3 Lack of management priority and accountability.
- CF/ORSB-4 Lack of an ORO wide procedure for development, review, and approval of SB documents. Roles and responsibilities for AMEM and AMESH were not clear.
- CF/ORSB-5 Insufficient technical capabilities for development, review, and management of SB documents.
- CF/ORSB-6 Lack of an independent SB assessment function.
- CF/ORSB-7 DOE technical support contractors used trainees and unqualified staff to prepare SB documents.
- CF/ORSB-8 SB decisions are expert-based, relying on key individuals, rather than a standards-based system driven by requirements and supported by established systems and procedures.

### Root Causes

1. The ORO belief that the nuclear safety risks for the BJC work was not significant.

This belief stemmed from the fact that the BJC work involved demolition and site clean-up, and the facilities were not in an operational mode. High risk and probability assigned to the industrial and chemical safety hazards inherent in the work rather than to the nuclear safety hazards, which were considered low probability. Therefore, nuclear safety requirements were not deemed necessary to operate the facilities safely. The WSS in the BJC contract were deemed necessary and sufficient. Implementation of nuclear safety requirements were considered to be too costly with regard to perceived risk.

2. Lack of accountability and consequences for not having approved SB documents.

There was no clear set of ORO expectations, standards, and performance measures for SB. The line organizations were responsible for SB authorization and approval with guidance and support from the AMESH organization on an "as needed basis" and only as requested. Under this arrangement, line organizations could "answer shop" and use unqualified in-house personnel or contractors to expedite SB reviews. Further complicating this was a breakdown in communications between AMEM and AMESH creating a lack of trust and collaboration between the two organizations. There were no consequences for AMEM not having an independent review using SB experts in AMESH. Furthermore, there were no consequences for the two organizations not working together and seeking to find solutions to problems. There are no formal mechanisms established to resolve conflicts and technical disagreements between AMESH and AMEM. Consequently, the path of least resistance was chosen. All these choices are influenced by the belief that the nuclear safety risks were not significant for the BJC work that resulted in a lack of management priority and accountability for having approved SB documents.

### **3.1.2 DOE Root Cause Analysis of WSS Issue**

#### Problem Statement

DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS.

## Problem Definition and Background

The DNFSB and the DOE-HQ Independent Assessment Team reviewed the BJC contract and found that many of the DOE orders important to nuclear safety are not requirements in the contract, but instead are cited as guidance. Appendix E of the BJC M&I contract contains the baseline list of applicable directives that govern all BJC's work activities. Mandated by the list is a set of WSS. Although BJC is responsible for 29 Hazard Category 2 and 3 nuclear facilities, the WSS did not include all applicable nuclear safety directives and standards. Of primary concern to the DNFSB and the DOE-HQ Independent Assessment Team is DOE 5480.23, *Nuclear Safety Analysis Reports*, which was not included as a requirement. Therefore, annual updates for SB documents are not required for BJC. This has contributed to outdated SB documents that do not reflect current facility configurations, hazardous material inventories, and current controls. Some nuclear safety directives were included, but these were only for BJC Category 2 nuclear facilities. The rationale for omitting the nuclear safety requirements is not given in the WSS documents since the process for "necessary and sufficient sets of standards" (DOE Manual 450.3-1) does not require formal justification when requirements and standards are not selected.

## Contributing Factors

CF/OROI-1	Belief that nuclear safety risks were not significant for BJC work.
CF/OROI-2	10 CFR 830, Subpart B, SB Requirements did not exist.
CF/OROI-3	No formal consequences for omitting nuclear safety requirements from the WSS.
CF/OROI-4	DOE Manual 450.3-1 <i>The DOE Closure Process for Necessary and Sufficient Sets of Standards</i> allows omission without formal justification.

## Root Cause

The ORO belief that the nuclear safety risks for the BJC work was not significant.

This belief stemmed from the fact that the BJC work involved demolition and site cleanup. The facilities were not in an operational mode. Industrial and chemical safety hazards were considered to carry a higher risk. Because of the nature of the work, nuclear safety hazards were considered to be low probability. Therefore, nuclear safety requirements were not deemed necessary to operate the facilities safely. Implementation of nuclear safety requirements were considered to be too costly with regard to the perceived risk.

### **3.1.3 DOE Root Cause Analysis of Technical Competence Issue**

## Problem Statement

Inadequate technical expertise in ORO to manage the SB for nuclear facilities.

## Background and Problem Definition

According to the Chung Assessment report, there was no indication that consideration was given to the adequacy of technical resources needed to accomplish required SB reviews and approvals, when approval authority was delegated. Further, no management accountability expectations or mechanisms were established to ensure that approval authorities were adequately exercised. Delegation letters from EM HQ and within ORO provided no basis for granting approval authority, nor did the recipient organizations attempt to communicate their capabilities. The AMEM office does not have the staffing and technical resources necessary to effectively exercise its nuclear safety management responsibilities. Likewise, the AMESH office does not have adequate staffing to support all the SB reviews and approvals.

Through attrition, promotions, lateral position changes, and budget cuts, staff and positions have been lost and there is limited funding available for support service contractors.

#### Contributing Factors

- CF/ORTC-1 ORO-wide staffing reductions and hiring limitations due to budget cuts.
- CF/ORTC-2 Staff changes in Nuclear Safety Division (NSD). Positions were lost along with people. Two people retired, two promoted, and two made lateral position moves.
- CF/ORTC-3 When people leave, corporate knowledge and experience is lost. Cannot hire new person until after other person has left.

#### Root Causes

1. The ORO belief that the nuclear safety risks for the BJC work was not significant.
2. Lack of management accountability and consequences for not having approved SB documents.

### **3.1.4 DOE Root Cause Analysis of ISMS Issue**

#### Background and Problem Definition

Declaration of ISMS verification may have been premature.

The DOE-ORO reviewed the implementation of BJC's ISM system in February 2000. That review identified numerous issues associated with the development of and adherence to safety AB, absence of nuclear safety orders from the WSS, and the lack of clear definition of and competence to execute roles and responsibilities within both DOE-ORO and BJC. In October 2000, DOE-ORO conducted a follow-up review that closed 40 of the 50 original findings, but identified 25 more, many of which related to the same three areas identified in the February 2000 review. On November 7, 2000, the DOE-ORO manager declared BJC's ISM program implemented, subject to BJC's completing additional corrective actions. In October 2001, the DNFSB conducted a review of defense nuclear facilities operated by BJC. The DNFSB found that many of the deficient conditions found in the earlier ISM program assessments remained uncorrected. For example, as of October 1, 2001, the DNFSB found that neither DOE-ORO nor BJC had compiled a complete list of their safety AB documents, 18 months after the condition was first highlighted by DOE's ISM system review. On November 1, 2001, the DOE-ORO manager revoked ISM System implementation for BJC and the DOE-ORO Office.

#### Contributing Factors

- CF/ORIS-1 No centralized ORO corrective action tracking and reporting system to bring open issues to management's attention and ensure closeout of ISM System verification findings.
- CF/ORIS-2 No performance standards were set for successful completion.
- CF/ORIS-3 Unclear who was accountable for the ISMS.
- CF/ORIS-4 Lack of management priority and accountability for closing the findings.

#### Root Causes

1. Lack of management priority and accountability for closing the ISM system deficiencies.

There were two options considered when deciding whether or not to declare ISMS implementation. Option 1 was to withhold implementation pending verification of further BJC and DOE-ORO actions. Option 2 was to approve implementation now and focus on the core function of feedback



and continuing improvement to implement the needed change. Option 2 was selected and the ISMS was declared implemented, subject to BJC's completion of additional corrective actions. The rationale for this decision was to send a strong, clear message that DOE expects a contractor's ISM program to be in place and functioning today as well as in the future. DOE-ORO and BJC had invested a significant amount into program implementation and DOE thought it important to reinforce that progress and accountability expected of the program. The thought was to rely on the ISM program core function of feedback and continuing improvement to further drive the needed corrective actions and institutionalize the program in the workplace. Selection of option 2 and reliance on the ISMS improvement process failed to achieve the desired outcomes.

There was a lack of management priority and accountability for closing the ISM program deficiencies. Continued ISM action was thought to be discretionary and not a priority since it had been implemented. There was a lack of consequence and accountability for not following up on the corrective actions, yet there was no central tracking system to elevate the deficiencies to management's attention.

### **3.2 BJC ROOT CAUSE**

The findings, observations, conclusions, and recommendations from these assessments were evaluated by a group of ISMS Improvement Project Team leaders and Performance/Quality Assurance (P/QA) staff. The evaluation team included personnel trained in TapRoot, Barrier, Fault Tree, Kepner-Trego, and other root cause methods designed to obtain and analyze data necessary to understand relevant causal factors and institute sustained improvements. Because this effort primarily focused on why the administrative barriers in place did not prevent these events, Barrier Analysis was used as the preferred tool for root cause analysis consistent with BJC Procedure BJC-PQ-1230, "Root Cause Analysis".

#### **3.2.1 BJC SB Root Cause Analysis**

The root cause analysis responded to the DNFSB letter of October 15, 2001 and augmented the previous root cause analysis documented in NTS report (Section 2.2, BJC NTS Report). The causal analysis included review of the independent assessment report issued by DOE-HQ, the summary report on the 28 internal SB document slowdown assessments for Category 2 and 3 nuclear facilities, findings from the joint DOE-ORO/BJC SB Technical Adequacy Review, and four additional occurrence reports describing SB-related concerns.

**Issue:** Development, maintenance, and implementation of SB documents have not been managed to consistently assure adequate implementation.

**Causal Factors:**

**CF/BJCSB-1** Facility hazard documents were developed by multiple organizations from multiple prime contractors at five sites over many years to varying standards/procedures with varying DOE expectations, reviewers, and review processes.

**CF/BJCSB-2** Expectations and requirements with respect to AB and facility hazard document development, maintenance, and implementation have evolved and changed from DOE orders to WSS to 10 CFR 830 Subpart B, while the base documents have remained unchanged. "Old" documents are sometimes reviewed per newer standards and found lacking.

- CF/BJCSB-3** Traditional AB document structures (Safety Analysis Reports [SARs], Basis of Interim Operations [BIOs], etc.) and associated safety analysis requirements, e.g., natural phenomena, were developed/designed for operating facilities and have not been "readily applicable" to many EM facilities (shutdown, inactive facilities, burial grounds, contaminated sites, etc.) and activities (facility surveillance and maintenance [S&M], environmental remediation, decontamination and decommissioning [D&D], etc.). Many of these issues will be resolved as documents are updated to 10 CFR 830 Subpart B safe harbor methodology.
- CF/BJCSB-4** In some instances, the technical basis supporting AB documents is not clearly documented and does not meet current expectations.
- CF/BJCSB-5** Updating AB documents has been viewed by some DOE, BJC, and subcontractor personnel to be of lesser importance for some EM facilities due to their shutdown, inactive status and planned disposition, resulting in a lack of rigor in AB management and implementation.
- CF/BJCSB-6** While AB documents, i.e., SARs and BIOs, have been maintained via the Unreviewed Safety Question Determination (USQD) process, periodic updates/revisions have not been processed, resulting in some AB documents having numerous USQDs and being difficult to understand, implement, and utilize.
- CF/BJCSB-7** DOE and BJC have been reluctant to expend resources to update AB documents for shutdown, inactive facilities planned for demolition/disposition/remediation.
- CF/BJCSB-8** The M&I contract did not require formal updates to AB documents as a part of contract transition. Additionally, the BJC contract transition plan did not include provisions for formal AB document revisions to bring documents up-to-date for new prime contract conditions. Document updates were made via the USQD process.
- CF/BJCSB-9** The basis for facility categorization developed by the prior prime contractor, has not been maintained current, and has not been well understood by DOE-ORO and BJC managers. Although the due diligence report submitted by BJC in October 1998 identified that the AB documents had been prepared by the prior contractor and not BJC, DOE-ORO EM and BJC relied on the adequacy of those documents for continued EM activities.
- CF/BJCSB-10** AB for EM facilities were administered for many years on a decentralized basis without an integrated, central document control and record management process, resulting in difficulties in identifying and assuring completeness of AB documents. While actions have been taken to strengthen the document control and records management process for AB documents, further improvement is needed.
- CF/BJCSB-11** The DOE-ORO and BJC processes for administering AB documents has not been effective in managing interfaces. There was a lack of a consistent interface protocol, i.e., AB document submittals were from multiple points in BJC to multiple points in DOE-ORO EM, resulting in "lost" documents and difficulties in DOE tracking, review, and approval.
- CF/BJCSB-12** DOE-ORO lacked a defined organization, process, and procedures for consistently administering and managing the AB process, documents, and reviews. In some cases, communications between BJC and DOE-ORO have not been effective to assure timely resolution of AB-related issues and comments.
- CF/BJCSB-13** BJC has not established minimum qualification requirements for personnel in facility management positions for nuclear category 2 and 3 facilities.
- CF/BJCSB-14** In some cases DOE-ORO EM, BJC, and subcontractor personnel with facility management responsibility for AB development and implementation have not been sufficiently familiar with AB documents, requirements, and implementation.

- CF/BJCSB-15** SMPs and associated SMP descriptions in SB documents (SARs, BIOs, etc.) varied across multiple sites and were not consistently updated to reflect corporate programs under the M&I contract. SMP descriptions in some SB documents reflect programs implemented by the previous contractor.
  - CF/BJCSB-16** BJC and subcontract managers were not held accountable in rigorously exercising nuclear safety roles, responsibilities, and authorities in facilities some of which had transitioned from their original missions to S&M without approved updates to the SB documents.
  - CF/BJCSB-17** BJC and subcontractors have not implemented a uniform set of requirements in the respective USQD process documents.
  - CF/BJCSB-18** The flow-down of SB requirements into BJC and subcontractor procedures was not rigorously administered.
- Root Cause:** The DOE-ORO and BJC processes and organizational alignment for management of AB documents have not been fully integrated, nor well documented.

### **3.2.2 BJC DOE Orders of Interest Root Cause Analysis**

The October 15, 2001 letter from the DNFSB questioned the rationale for not including relevant DOE nuclear safety directives in the BJC contract. Some DOE nuclear safety orders were listed as guidance or were partially incorporated into the contract. While implementation guidance allows tailoring or grading of directives, the guidance was not consistently applied. BJC initiated a comprehensive review of the 109 Orders of Interest to the DNFSB attached to the October 15, 2001 letter. In addition, an evaluation of the standards change control processes was initiated.

**Issue:** DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS.

**Causal Factors:**

- CF/BJCOI-1** Lack of a process to periodically evaluate the completeness of the WSS to accomplish the BJC scope.
- CF/BJCOI-2** BJC assessments did not identify gaps related to DOE nuclear safety directives.

**Root Cause:** The WSS process failed to identify an adequate set of nuclear safety standards.

### **3.2.3 BJC TECHNICAL COMPETENCE ROOT CAUSE ANALYSIS**

The BJC baseline qualification program assessment utilized information from the SB flowdown evaluations, internal and external independent assessments and reviews of the nuclear facility personnel qualification requirements. Two of the areas of weakness identified by the baseline management assessment relate directly to those cited by the DNFSB. It was determined that there was in some cases less than adequate knowledge and familiarity with SB documents by key facility personnel.

**Issue:** Sufficient technical expertise is not in place to accomplish responsibilities required by the SB for nuclear facilities.

**Causal Factors:**

- CF/BJCTC-1** The lack of minimum qualification requirements permitted some personnel to be placed in positions of responsibility who did not have the requisite background and experience with the facility safety documents and the associated controls.
- CF/BJCTC-2** The lack of established minimum acceptable staffing levels allowed the transition between DOE prime contractors to occur with less than sufficient technical staffing and resources to support nuclear facility management or SB responsibilities.
- CF/BJCTC-3** Standards, policies, and procedures for staffing nuclear facilities were incomplete. In particular, the absence of standards in the area of personnel selection, training and qualification created the shortcomings in technical competence.

**Issue:** A rigorous program has not been maintained to ensure that competencies are commensurate with roles and responsibilities.

**Causal Factors:**

- CF/BJCTC-4** At the time of prime contract transition, BJC did not formally verify and document qualification of nuclear facility staff in terms of education, experience, previous qualifications, and job related training.
- CF/BJCTC-5** The reliance on industry standards for the establishment of qualification requirements contributed to failure, in some cases, to establish sufficient requirements based job responsibilities.
- CF/BJCTC-6** The process for the establishment of training and qualification requirements based on an analysis of the job requirements lacked formality.

**Root Cause:** The BJC training and qualification for personnel involved in nuclear facility operations did not meet the expectations of DOE Order 5480.20A, which was not included in the BJC contract.

**3.2.4 BJC ISMS Improvements Root Cause Analysis**

Based on questions regarding the maturity of BJC ISMS implementation, BJC re-examined the OFIs from the February 2000 DOE verification. The review of corrective actions in response to these OFIs indicated that half of the actions did not effectively address the original issues. Subsequent consultation with outside ISMS experts identified additional areas for improvement. In particular, the lack of an effective trend analysis process to promote feedback and improvement and a formalized approach to utilization of subject matter experts (SMEs) were cited.

**Issue:** Feedback and improvement process has not been fully effective to ensure an expected degree of ISMS maturity.

**Causal Factors:**

- CF/BJCIS-1** OFI corrective actions were not effective in some areas.
- CF/BJCIS-2** Issue closure process for ISMS corrective actions did not adequately assess effectiveness.
- CF/BJCIS-3** Analysis/trending of performance data was not effective in identifying improvement opportunities.

**Issue:** ISMS implementation by BJC failed to adequately assure ongoing effectiveness and continuous improvement.

**Causal Factors:**

- CF/BJCIS-4** Roles, responsibilities, and structure for SMEs were not clearly defined.
- CF/BJCIS-5** Indicators of ISMS weaknesses were not synthesized to enable detection of overall program deficiencies in some areas.
- CF/BJCIS-6** Lack of rigor in enforcing field implementation of existing requirements.

**Root Cause:** The maintenance of ISMS was not effective.

**3.2.5 Root Cause Summary**

Based on the DOE-ORO and BJC root cause analyses, the following root causes were identified:

- The DOE-ORO and BJC processes and organizational alignment for management of AB documents have not been fully integrated, nor well documented.
- The WSS process failed to identify an adequate set of nuclear safety standards.
- The BJC training and qualification for personnel involved in nuclear facility operations did not meet the expectations of DOE Order 5480.20A, which was not included in the BJC contract.
- The ORO belief that the nuclear safety risks for the BJC work were not significant.
- Lack of management accountability and consequences for not having approved SB documents.
- The maintenance of ISMS was not effective.
- Lack of management priority and accountability for closing ISMS system deficiencies.

## **4.0 DOE-ORO/BJC IMPROVEMENTS PROJECT APPROACH AND CAP DEVELOPMENT**

This section describes the approach used by DOE-ORO and by BJC to develop specific corrective actions. These corrective actions respond to the areas of concern in the DNFSB October 15, 2001 letter to DOE from the DNFSB and improvements needed based on subsequent DOE and BJC assessments of operations of nuclear facilities, as discussed in Section 2.0.

### **4.1 DOE-ORO/BJC ISMS IMPROVEMENTS PROJECT**

Based on the issues identified by the various internal and external assessments, DOE-ORO and BJC initiated a comprehensive ISMS Improvements Project. The overall objectives include ensuring that all causal factors are addressed and corrective actions are integrated for efficiency, that actions are effective and institutionalized in both the DOE-ORO and BJC organizations to prevent recurrence of the issues, and that appropriate priorities are established for the follow-up actions. Considering the breadth of the issues the DOE-ORO/BJC project team elected to utilize the four areas highlighted in the DNFSB October 15, 2001 letter as a basis for capturing all of the issues, observations, and finding from the assessments. Four task teams were established to initiate corrective action development for:

- SB Improvements
- DOE Orders of Interest to the DNFSB
- Technical Competence/Training/Qualifications/Staffing
- ISMS Improvements

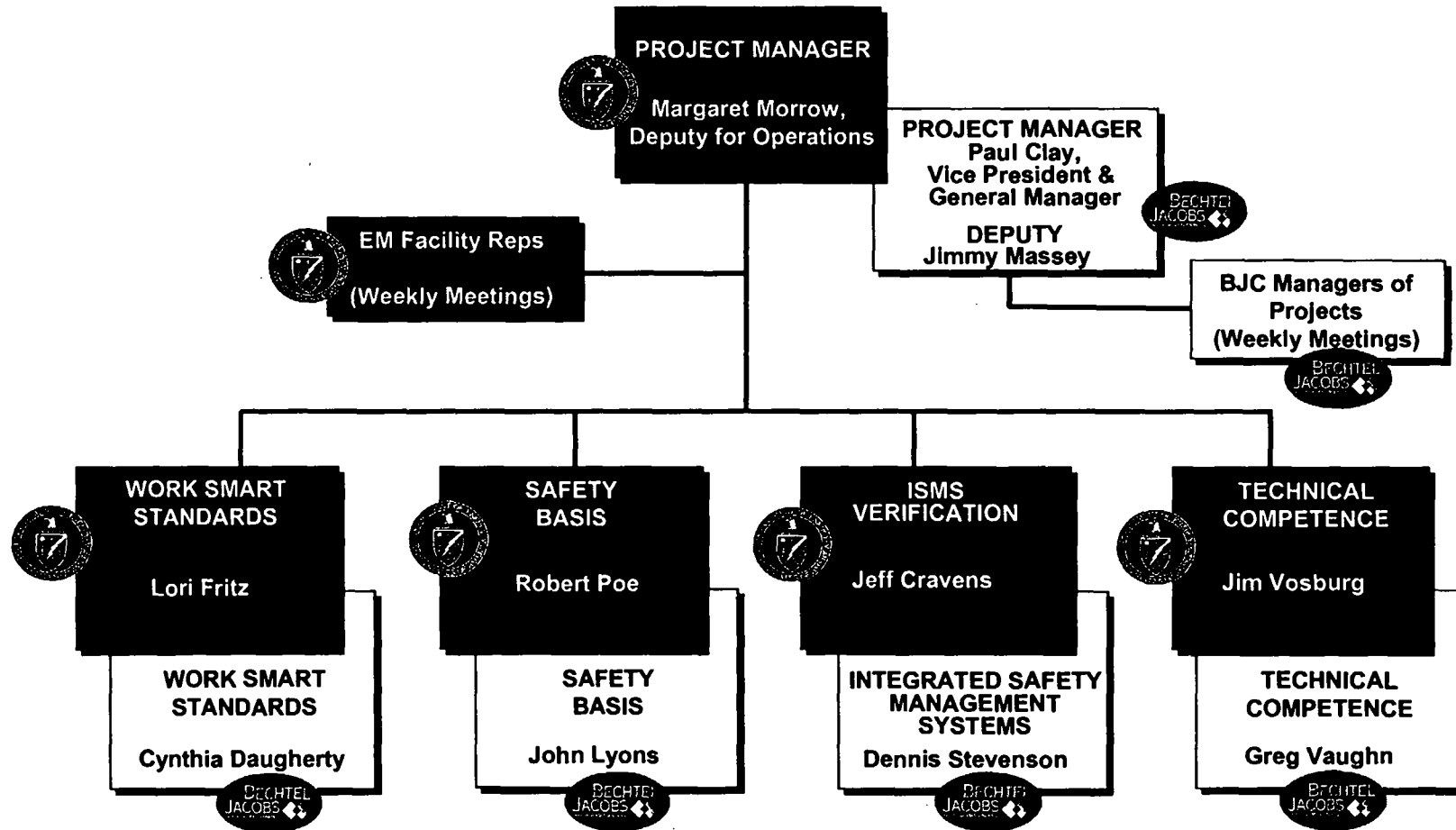
The task teams are led by DOE-ORO and BJC counterparts who have communicated frequently. The ISMS Improvement Project Team is co-led by DOE-ORO and BJC executive managers who meet weekly to review progress against plans and provide direction for the team. The ISMS Improvements Project Team Organization is depicted in Figure 4.1.

In several instances, the joint DOE-ORO/BJC task teams have established working groups or technical assessment teams to further address issues and implement process improvements. For example, a SB Working Group has been established to meet weekly for the purpose of instituting process improvements and developing guidance for both the DOE-ORO and BJC organizations. The group is comprised of DOE-ORO EM, DOE-ORO NSD, and BJC Nuclear Safety staff. The SB Working Group facilitates SB process improvements, addresses technical standards or interface issues, coordinates SB update planning and SB document reviews to achieve SB update/upgrade objectives.

The project team assimilated findings generated by multiple, successive assessments into an integrated project effort. In addition, DOE-ORO and BJC already had initiated a plan to revise and upgrade the SB documents to achieve compliance with 10 CFR 830 Subpart B. In many instances, the upgraded documents will address the findings documented for the current, existing SB. Therefore, the project team developed this CAP to reflect the synthesis of issues resulting from multiple assessments into an integrated and comprehensive CAP.

The outline for this CAP was based on guidance provided in a letter from the Assistant Secretary for EM to Field Office Managers, *Policy for Content and Implementation of Corrective Action Plans (CAP)*, dated October 4, 2001 which sets policy on expected content of CAPs.

**Figure 4.1 Integrated DOE/BJC ISMS Project Teams**



## 4.2 DOE-ORO AND BJC CAP DEVELOPMENT

Table 4.1 provides an overview of the guidance used by DOE-ORO and BJC for developing corrective actions.

**Table 4.1 DOE-ORO and BJC Corrective Action Development Guidance**

<p style="text-align: center;"><b>General</b></p> <p>Document the action or action(s) that will lead to ultimate resolution of the problem/issue and minimize the likelihood or recurrence. Be specific in defining what will be done (description of corrective action), who will do it (DOE/BJC responsible person), when work on the action will begin (initiation date), when it will be completed (completion date), and what evidence can be provided for closure (closure documentation). For each action step enter the information for these five items directly on this form which will become part of the overall CAP.</p> <p style="text-align: center;"><b>Description of Corrective Action (I/CATS Number)</b></p> <p>Begin each action with an action verb using terms such as: revise, implement, install, develop, and document. Avoid use of terms such as continue, review, improve, enhance, evaluate, and emphasize. If the corrective action involves more than one step, state each action separately and provide the needed information for each step on responsible person, initiation date, completion date, and closure documentation. Concisely state each action step separately and don't group multiple tasks together into single actions. Keep the action statement short by stating what will be done and not how it will be performed. Use terms that make the action closeable and measurable. Avoid use of terms such as all, continue, on-going, and improve. If the action must be on-going, specify how the completion can be measured, verified, and documented such as through an assessment and final assessment report.</p> <p>If a CAP addressing the same issue has been issued in response to a different assessment, please document that assessment and provide the ORION or the I/CATS reference. Do not duplicate an existing CAP.</p> <p style="text-align: center;"><b>DOE-ORO/BJC Responsible Person</b></p> <p>Clearly establish for each action step the DOE/BJC responsibility prior to finalizing this step. Resource allocations to support the actions must be available. Ensure qualification and training needs to perform the action(s) are identified and understood.</p> <p style="text-align: center;"><b>Corrective Action Initiation Date</b></p> <p>Must be specific for each action(s). Consider resource and funding availability, dependence on other DOE or BJC actions, and priority with existing or upcoming commitments.</p> <p style="text-align: center;"><b>Expected Completion Date</b></p> <p>Refer to discussion of initiation date. Also consider efforts needed to document action completion.</p> <p style="text-align: center;"><b>Corrective Action Closure Documentation Required</b></p> <p>Begin development of the action plan with the end in mind. Establish a definition of what constitutes completion of each action step, how you will document completion of the action, and what evidence of completion can be provided.</p> <p style="text-align: center;"><b>Support Action Required?</b></p> <p>Describe any actions required by DOE necessary to support completion of the corrective action(s). If DOE action is necessary, be sure that the DOE action is understood and accepted by the responsible DOE party and included in the DOE CAP for this assessment. This entry can be made once for the recommendation being addressed and does not have to be repeated for each step of the action plan.</p> <p style="text-align: center;"><b>Link to Other Corrective Action? (Specify)</b></p> <p>Describe the linkage to any other corrective action(s) developed in response to the DOE-HQ Assessment of BJC and ORO SB Authorization and Approval Processes, February 1, 2002 or to other corrective actions developed in response to the DNFSB October 15 letter to DOE. Use this to avoid duplicate entries in developing the integrated CAP.</p>
--



## 5.0 CORRECTIVE ACTION PLAN

This section summarizes the corrective actions developed by DOE-ORO and BJC to address the root causes of the identified issues. As the assessments and reviews were completed, compensatory measures were implemented where needed to assure the safety of ongoing operations. Tables 5.1 and 5.2 provide summaries of immediate corrective actions initiated or completed by DOE-ORO and by BJC, respectively. Initial actions and compensatory measures included:

- Implementation of facility-specific compensatory measures or operational limitations where needed to assure continued safe operations for all DOE-ORO EM nuclear facilities.
- Completion by BJC of comprehensive flowdown assessments for all nuclear facilities to identify any concerns related to technical adequacy, flowdown of requirements, implementation, and compliance.
- Completion by DOE-ORO of an independent verification of the SB flowdown assessments performed by BJC.
- Completion of a joint DOE-ORO BJC technical adequacy review of SB hazards and accident analyses.
- Revocation of DOE-ORO and BJC ISMS verification and initiation of planning for a comprehensive re-verification of ISMS programs, including management systems beyond SB.
- Allocation of additional experienced resources to supplement ORO and BJC staff in the performance of essential nuclear safety functions.
- Modifications of the M&I contract for areas where gaps in the WSS were identified.

This CAP presents more than 100 corrective actions to address specific issues, findings, and observations cited by the DNFSB, the DOE-HQ Independent SB Assessment, DOE-ORO assessments and BJC self assessments. However, DOE-ORO and BJC have focused the actions collectively to attain an overall objective. DOE-ORO and BJC view the completion of this CAP as an opportunity to realize significant improvements to their respective nuclear safety and ISM programs. The overall objective is to assure the protection of the public, workers, and environment through implementation of technically adequate and 10 CFR 830 Subpart B-compliant SB documents, tailored to current missions and hazards, with an effective, enabling ISMS and supporting Safety Management Programs (SMPs).

The DOE-ORO and BJC analyses have identified the conditions and factors that contributed to areas of concern and issues, and have provided a basis for definition of corrective actions. Implementation of these actions will achieve the overall DOE-ORO/BJC objective. Upon completion of these corrective actions, the following improvements will have been implemented:

- Current SB documents will be controlled, their technical adequacy and implementation confirmed, with compensatory measures applied where needed to assure safety and corrective actions effected for identified findings. (Table 5.4-1)
- DOE-ORO roles, responsibilities, authorization, and accountabilities will have been clarified, and actions completed to address staffing deficiencies and to confirm technical competence. (Table 5.7)
- The M&I contract WSS will have been modified to incorporate orders and standards determined to be needed for effective safety management. (Tables 5.5 and 5.6)
- DOE-ORO and BJC management system improvements needed to support SB development, renewal, approval, and implementation will be in place. (Tables 5.3 and 5.4-3)
- SMP improvements will have been implemented to complement and support Documented Safety Analysis (DSAs). (Table 5.4-2)
- DOE-ORO and BJC training/qualification process will have been implemented and training completed. (Tables 5.7 and 5.8)

- DOE-ORO ISMS process improvements will have been implemented, providing a basis for re-verification. (Table 5.9)
- BJC ISMS process improvements will have been implemented to promote maturity and provide a basis for DOE re-verification. (Table 5.10)
- Categorization of facilities will have been verified to be compliant with DOE Standard 1027-92. (Table 5.4-4)
- BJC will have developed and submitted for DOE review and approval 10 CFR 830 Subpart B-compliant DSAs for all EM nuclear facilities. (Table 5.4-4)

DOE-ORO and BJC believe that completion of the improvements summarized above will meet our stated objective.

For each corrective action summary table presented in Sections 5.1 through 5.4, links are provided to the DNFSB area of concern, the issue, the root cause(s), and causal factors. The tables also provide action completion dates and reference to the applicable DOE-HQ independent SB assessment findings and recommendations. For reference, Table 5.0 provides a crosswalk from the root causes to the corrective action tables (Tables 5.3 through 5.10).

**Table 5.0 Crosswalk from Root Causes to Corrective Action Tables**

<b>Root Cause</b>	<b>DOE-ORO Corrective Actions</b>	<b>BJC Corrective Actions</b>
The DOE-ORO and BJC processes and organizational alignment for management of AB documents have not been fully integrated, nor well documented.	Table 5.3	Tables 5.4-1, 5.4-2, 5.4-3, 5.4-4
The WSS process failed to identify an adequate set of nuclear safety standards.	Table 5.5	Table 5.6
The BJC training and qualification for personnel involved in nuclear facility operations did not meet the expectations of DOE Order 5480.20A, which was not included in the BJC contract.	—	Table 5.8
The ORO belief that the nuclear safety risks for the BJC work were not significant.	Tables 5.3, 5.5, 5.7	—
Lack of management accountability and consequences for not having approved SB documents.	Table 5.3, 5.7	—
The maintenance of ISMS was not effective.	Table 5.9	Table 5.10
Lack of management priority and accountability for closing ISMS system deficiencies.	Table 5.9	—

### 5.1 SB CORRECTIVE ACTIONS

EM manages 118 Category 2 and 3 nuclear and 256 radiological facilities at five sites in three states. Facility types include inactive burial grounds, waste storage facilities, waste treatment facilities, materials storage facilities, and D&D facilities. EM nuclear facilities are governed by 32 current sets of SB documents, with 148 separate SB documents (both bases documented safety analyses and associated DOE approval documents).

The SB corrective actions defined below respond to the internal and external assessments described in Section 2.0. Figure 5.1 illustrates the key assessment activities conducted and planned to assure the adequacy of the SB for each nuclear facility for authorized operations and activities. These

actions will confirm and assure continued safe operations for all EM nuclear facilities. In addition, upon completion of the SB upgrades by April 2003, EM will have developed 10 CFR 830 Subpart B-compliant DSA.

This section summarizes the corrective actions developed by DOE-ORO and BJC to address the findings and recommendations that are specific to the SB process, and to address the causal factors and root cause defined in Section 3.0.

The defined corrective actions include those already underway as part of the earlier NTS report and the ISMS Improvements effort, and several new actions developed to address findings and recommendations from the various assessments completed.

#### **5.1.1 DOE CORRECTIVE ACTIONS**

DOE corrective actions are summarized in Tables 5.3. Appendix A provides further detail for these corrective actions.

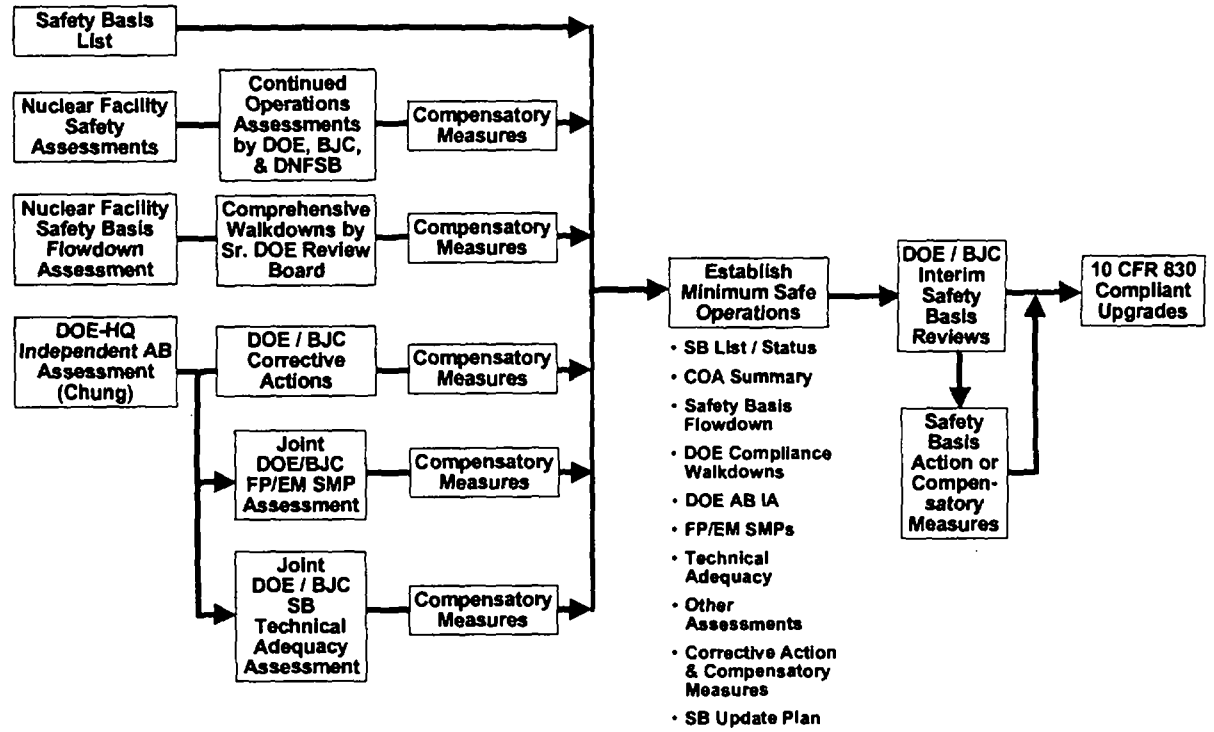
**Table 5.1 Summary of Immediate Corrective Actions Initiated or Completed by DOE-ORO**

<b>SAFETY BASIS</b>
DOE-ORO suspended fissile material handling at ETTP, pending resolution of R/CAAS TSRs issues
All ORO-EM SB documents require concurrence by ORO NSD prior to submittal to EM-1
Recommendations from HQ Independent SB Review Team incorporated into SB Flowdown Assessments
DOE-EM performed independent verification of BJC SB Flowdown Assessment, including review by Senior DOE-ORO Board
DOE-ORO performed joint review with BJC of SB Technical Adequacy for Operating Cat. 2/3 Facilities
DOE-ORO performed a review of BJC Hazard Categorization Process
Established joint DOE/BJC SB Working Group for SB updates and 830 upgrades
<b>DOE ORDERS OF INTEREST TO THE BOARD</b>
OR directed BJC incorporation of DOE Orders 5480.19, 5480.20A, 420.1 Change 3 (Section 4.2, <i>Fire Protection</i> ), and DOE STD 1120.98
DOE-HQ conducted an independent review of M&I Contract Requirements Adequacy
OR-directed BJC prepare 17 Type I and 4 Type II changes
<b>EFFECTIVENESS OF ISMS IMPLEMENTATION</b>
DOE-ORO Manager revoked ORO and M&I ISMS Verification
Approval authority for Category 3 and higher facilities pulled back to EM-1
DOE-ORO initiated re-evaluation of previous ISM OFI
DOE-ORO issued Nuclear Criticality Program Description
Integrated ISMS Improvements Project Team established with DOE-ORO Deputy Manager or Project Manager
<b>ROLES &amp; RESPONSIBILITIES/TECHNICAL COMPETENCY</b>
Director of High Level Waste Operations at Savannah River Site detailed to ORO to provide technical support
Two Excepted Service positions posted for EM and NSD
OR EM Program Managers received AB training
OR modified training/qualification requirements to include nuclear safety training for Program Managers
EM Facility Representatives (FRs) report weekly to the Oak Ridge Deputy Manager for Operations regarding BJC Nuclear Facilities
DOE-ORO issued Formal Instructions for the review and approval of AB documents
DOE-ORO hired Nuclear Criticality Safety (NCS) Engineer
ORO is revising its Functions, Roles, and Accountability Matrix (FRAM) to reflect current EM Authorities

**Table 5.2 Summary of Immediate Corrective Actions Initiated or Completed by BJC**

<b>SAFETY BASIS</b>
NTS Report issued with Root Cause and CAP
Nuclear Facility Safety Assessment completed for all Category 2 and 3 nuclear facilities
Continued Operations Assessment Review conducted with DOE-EM and DNFSB representative Suspended actions at 13 facilities; 5 remain suspended
SB Review Board established
Nuclear Facility SB Documentation List issued and approved by DOE-ORO
Radiological Facility List issued
SB Flowdown Assessments completed for all Category 2 and 3 nuclear facilities
Joint DOE/BJC SMP Assessment initiated (Fire Protection & Emergency Management [FP&EM])
Joint DOE/BJC SB Technical Adequacy Assessment completed
Ongoing operations safety assessment issued to DOE
<b>DOE ORDERS OF INTEREST TO THE BOARD</b>
Review of DOE Orders of interest to DNFSB completed
Early implementation of four orders initiated
Began preparation of DOE-directed Type I (17) and Type II (4) changes
<b>EFFECTIVENESS OF ISMS IMPLEMENTATION</b>
Managers of Projects' (MOPs) Assessment of ISMS Implementation completed
Complete re-evaluation of previous ISM OFI
Corporate Independent Oversight Team established
Integrated ISMS Improvements Project Team established with Project Manager, Deputy Project Manager, and Team Leads
<b>ROLES &amp; RESPONSIBILITIES/TECHNICAL COMPETENCY</b>
Senior Nuclear Safety Technical Advisor named
Update of Nuclear Facility Training and Qualifications Program initiated
Hired senior BJC Nuclear Safety Manager
Hired two additional Nuclear Safety staff

Figure 5.1 Confirm Nuclear Facility SB for Operations



**Table 5.3 ORO Corrective Actions for SB Improvements**

**DNFSB AREA OF CONCERN:**

Safety Basis

**ISSUE(S):**

Inadequate SB authorization and management system for AMEM nuclear facilities managed by BJC.

**ROOT CAUSE(S):**

- A belief that the nuclear safety risks for the BJC work were not significant.
- A lack of accountability and consequences for not having approved SB documents.

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/ORSB-2</b> No consequences for not having an approved SB documents.</p> <p><b>CF/ORSB-3</b> Lack of management priority and accountability.</p>	Determine root causes for the SB issues identified and corrective actions.	OR/MG1-1	MG1	April 2, 2002 (complete)
	Identify missing management systems and processes needed to adequately review and approve SB documents.	OR/MG1-2	MG1	April 30, 2002
	Design and codify the necessary management systems and processes.	OR/MG1-3	MG1	May 15, 2002
	Issue organization-specific procedures, as needed, to implement the necessary management systems and processes (AMESH, AMEM, Assistant Manager for Assets Utilization [AMAU], Assistant Manager for Laboratories [AML]).	OR/MG1-4 OR/MG1-5 OR/MG1-6 OR/MG1-7	MG1	May 30, 2002
	Implement organization-specific procedures, as needed, to implement the necessary management systems and processes (AMESH, AMEM, AMAU, AML).	OR/MG1-8 OR/MG1-9 OR/MG1-10 OR/MG1-11	MG1	July 1, 2002
	Verify implementation and adequacy of the necessary management systems and processes.	OR/MG1-12	MG1	October 1, 2002
	Manager M1-Issues expectation for manager accountability for SB and incorporate into M-1 and M-2 performance standard.	OR/MG4-1	MG4	April 30, 2002

**Table 5.3 ORO Corrective Actions for SB Improvements (continued)**

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/ORSB-4</b> Lack of an ORO wide procedure for development, review, and approval of SB documents. Roles and responsibilities for AMEM and AMESH were not clear.</p> <p><b>CF/ORSB-6</b> Lack of an independent SB assessment function.</p> <p><b>CF/ORSB-8</b> SB decisions are expert-based, relying on key individuals, rather than a standards-based system driven by requirements and supported by established systems and procedures.</p>	Incorporate expectations into AMEM, AMESH, AML, and AMAU performance standards.	OR/MG4-2 OR/MG4-3 OR/MG4-4 OR/MG4-5	MG4	March 29, 2002 (complete)
	Independently assess the effectiveness of the accountability process.	OR/MG4-6	MG4	April 1, 2003
	Evaluate effectiveness of implemented process to identify overlaps, gaps, and metrics.	OR/MG2-7	MG2	November 15, 2002
	Interim: Issue roles and responsibilities under M-2 signature.	OR/MG2-8	MG2	December 20, 2001 (complete)
	Long-term: Define roles and responsibilities in an ORO Directive.	OR/MG2-9	MG2	May 31, 2002
	Assess and implement compensatory measures to ensure safety of current operations.	OR/SB3-1	SB3	May 30, 2002
	Ensure DSAs are updated in accordance with 10 CFR 830.	OR/SB3-2	SB3	April 1, 2003
	Establish ORO Criticality Safety Program Description and generic implementing procedure.	OR/SB4-1	SB4	March 28, 2002 (complete)
	Review and accept BJC generic SMP descriptions.	OR/SB4-2	SB4	June 5, 2002
	Develop strategies for SMP implementation in SB documents.	OR/SB4-3	SB4	July 1, 2002
Review and comment on BJC DSA implementation guides/manuals.	OR/SB4-4	SB4	July 1, 2002	



**Table 5.3 ORO Corrective Actions for SB Improvements (continued)**

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Close out open CATS items regarding criticality safety.	OR/SB4-5	SB4	November 1, 2002
	Ensure incorporation of DOE O 420.1 in BJC WSS as appropriate.	OR/SB7-1	SB7	March 29, 2002 (complete)
	Ensure FHAs are conducted at BJC facilities and integrated into BJC SB documents, as appropriate.	OR/SB7-2	SB7	April 1, 2003
	Verify the FHAs are appropriately incorporated into SBs for UT Battelle and BNFL.	OR/SB7-3	SB7	August 1, 2002

### 5.1.2 BJC CORRECTIVE ACTIONS

BJC SB corrective actions have been organized into the following general areas:

**Nuclear Facility SB Assessments** – In response to internally identified findings and concerns associated with the DNFSB letter, BJC has initiated actions and assessments to assure the adequacy of current BJC SB documents. These corrective actions are defined in Table 5.4-1, Nuclear Facility Safety Assessments. As individual assessments are completed, the associated findings and observations are evaluated to determine safety significance, corrective actions defined, entered into the BJC I/CATS, and actions tracked to completion. Where needed, compensatory measures are implemented. Any conditions that meet applicable criteria are addressed through the DOE Occurrence Reporting System and/or are documented as a potentially inadequate safety analysis (PISA).

**SMP Improvements** – In response to identified issues and or concerns from internal and external reviews, BJC has initiated actions to achieve needed improvements in BJC SMPs and their implementation. These corrective actions are defined in Table 5.4-2, SMP Improvements.

**SB Process Improvements** – Based on the scope of work associated with updating and upgrading BJC SB documents. BJC has initiated actions to improve BJC SB development process and tools for use in development, maintenance, and implementation of SB documents and to support actions to achieve compliance with 10 CFR 830 Subpart B. These corrective actions are defined in Table 5.4-3, SB Process Improvements.

**SB Document Updates and Upgrades** – BJC has initiated actions to manage and control updates and upgrades to BJC SB documents to address findings and issues from the SB assessments and to achieve 10 CFR 830 Subpart B compliance. These corrective actions are defined in Table 5.4-4, SB Updates and Upgrades.

The BJC corrective actions defined in Tables 5.4-1 through 5.4-4 address the findings and recommendations from the DOE-HQ Independent Assessment related to the BJC SB process and associated documents. These tables provide a comprehensive listing of SB corrective actions, and provide a cross-reference (as applicable) to the associated finding from the DOE-HQ Independent Assessment Report, the applicable causal factor(s) described in section 3, and the NTS report. Many of these SB corrective actions were initiated by BJC based on internal assessments or as defined in the NTS report prior to the issuance of the DOE-HQ Independent Assessment Report. In some instances, the scope and/or focus of actions underway were revised based on input from the DOE-HQ Independent Assessment review team. Appendices B and C provide further detail for these corrective actions.

**Table 5.4-1 BJC Corrective Actions for Nuclear Facility Safety Assessments**

**DNFSB AREA OF CONCERN:**

Safety Basis

**ISSUE(S):**

Development, maintenance, and implementation of SB documents has not been managed to consistently assure adequate implementation.

**ROOT CAUSE:**

The DOE-ORO and BJC processes and organizational alignment for management of AB documents have not been fully integrated, nor well documented.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-1</b> Facility hazard documents were developed by multiple organizations from multiple prime contractors at five sites over many years to varying standards/procedures with varying DOE expectations, reviewers, and review processes.</p> <p><b>CF/BJCSB-2</b> Expectations and requirements with respect to AB and facility hazard document development, maintenance, and implementation have evolved and changed from DOE orders to WSS to 10 CFR 830 Subpart B, while the base documents have remained unchanged. "Old" documents are sometimes reviewed per new standards and found lacking.</p> <p><b>CF/BJCSB-3</b> Traditional AB document structures (SARs , BIOs etc.) and associated safety analysis requirements, e.g., natural phenomena, were developed/designed for operating facilities and have not been "readily applicable" to many EM facilities (shutdown, inactive facilities, burial grounds, contaminated sites, etc.) and activities (facility S&amp;M, environmental remediation, D&amp;D, etc.). Many of these issues will be resolved as documents are updated to 10 CFR 830, Subpart B, Safe Harbor Methodology.</p>	<p>Issue and obtain DOE approval of a single SB list identifying all SB documents for Category 2 &amp; 3 Nuclear Facilities for the five sites.</p>	<p>BJC/MG5c-79</p>	<p>MG5c</p>	<p>December 12, 2001 (complete)</p>
	<p>Verify that Nuclear Facility SB documents and the SB list are in the BJC records management center.</p>	<p>BJC/MG5c-81</p>	<p>MG5c</p>	<p>April 30, 2002</p>
	<p>Conduct reviews of AB 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.</p>	<p>BJC/SA1d-56 BJC/SA3a-65</p>	<p>SA1d SA3a</p>	<p>March 21, 2002 (complete)</p>

**Table 5.4-1 BJC Corrective Actions for Nuclear Facility Safety Assessments (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-4</b> In some instances, the technical basis supporting AB documents is not clearly documented and does not meet current expectations.</p> <p><b>CF/BJCSB-5</b> Updating AB documents has been viewed by some DOE, BJC, and subcontractor personnel to be lesser importance for some EM facilities due to their shutdown, inactive status and planned disposition, resulting in a lack of rigor in AB management and implementation.</p> <p><b>CF/BJCSB-6</b> While AB documents, i.e., SARs and BIOs, have been maintained via the USQD process, periodic updates/revisions have not been processed, resulting in some AB documents having numerous USQDs and being difficult to understand, implement, and utilize.</p> <p><b>CF/BJCSB-7</b> DOE and BJC have been reluctant to expend resources to update AB documents for shutdown, inactive facilities planned for demolition/disposition/ remediation. Instead, resources have been allocated to development of safety documents needed for S&amp;M, remediation, and D&amp;D projects.</p> <p><b>CF/BJCSB-9</b> The basis for facility categorization developed by the prior prime contractor, has not been maintained current, and have not been well understood by DOE-ORO and BJC managers. Although the due diligence report submitted by BJC in October 1998 identified that the AB documents had been prepared by the prior contract and not BJC, DOE-ORO EM and BJC relied on the adequacy of those documents for continued EM activities.</p>				
	Conduct assessments of FP&EM SMP implementation to supplement SBFD	BJC/SA1a-1 BJC/SA1a-19 BJC/SA1a-55 BJC/SA3a-66	SA1a SA3 SA1c	April 30, 2002
	Conduct SB technical adequacy assessment to supplement SBFD assessment, document results, and define corrective actions.	BJC/SA1c-54 BJC/SB1a-97 BJC/SB2a-101	SA1c SB1a SB2a	March 1, 2002 (complete)
	Conduct a joint DOE/BJC Nuclear Facility Safety Assessment of SB for each BJC nuclear facility to ensure that the current SB provides an adequate foundation for ongoing operations and activities pending completion of updates to the SB documents in accordance with 10 CFR 830 Subpart B.	BJC/MC1-1	NA	June 30, 2002
	Validate facility categorization and inventory controls.	BJC/MC2-1	NA	August 1, 2002
For all BJC category 3 facilities, issue to DOE for approval an updated hazards assessment document with updated hazard categorization.	BJC/SB5a-113	SB5	April 10, 2003	

**Table 5.4-1 BJC Corrective Actions for Nuclear Facility Safety Assessments (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-10</b>                      AB for EM facilities were administered for many years on a decentralized basis without an integrated, central document control and record management process, resulting in difficulties in identifying and assuring completeness of AB documents. While actions have been taken to strengthen the document control and records management process for AB documents, further improvement is needed.</p> <p><b>CF/BJCSB-14</b>                      In some cases DOE-ORO EM, BJC, and subcontractor personnel with facility management responsibility for AB development and implementation have not been sufficiently familiar with AB documents, requirements, and implementation.</p> <p><b>CF/BJCSB-18</b>                      The flow-down of SB requirements into BJC and subcontractor procedures was not rigorously administered.</p>	<p>For "suspect" radiological facilities, issue to DOE for approval an updated hazards assessment document with updated hazard categorization.</p>	<p>BJC/SB5a-114</p>	<p>SB5</p>	<p>August 1, 2002</p>

**Table 5.4-2 BJC Corrective Actions for SMP Improvements**

**DNFSB AREA OF CONCERN:** Safety Basis

**ISSUE(S):** Development, maintenance, and implementation of SB documents has not been managed to consistently assure adequate implementation.

**ROOT CAUSE:** The DOE-ORO and BJC process and organizational alignment for management of AB documents has not been fully integrated, nor well documented.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<b><i>FIRE PROTECTION PROGRAM</i></b>				
<p><b><i>CF/BJCSB-1</i></b>                      Facility safety documents were developed by multiple organizations from multiple prime contractors at five sites over many years to varying standards/procedures with varying DOE expectations, reviewers, and review processes.</p> <p><b><i>CF/BJCSB-2</i></b>                      Expectations and requirements with respect to AB and facility hazard document development, maintenance, and implementation have evolved and changed from DOE orders to WSS to 10 CFR 830 Subpart B, while the base documents have remained unchanged. "Old" documents are sometimes reviewed per new standards and found lacking.</p>	Conduct Assessments of FP&EM SMP implementation to supplement SB flowdown. Document results. Define Corrective Actions and enter into I/CATS.	BJC/SA1a-1	SA1a	April 30, 2002
	Conduct facility specific FP SME assessments of combustible loading and ignition controls as determined to be needed based on results from FP SMP Assessments.	BJC/SA1a-2	SA1a	August 30, 2002
	Modify the M&I contract to incorporate DOE Order 420.1, Section 4.2, FP, into BJC contract WSS.	BJC/SA1a-3	SA1a	February 28, 2002 (complete)
	Issue a BJC Policy to describe management commitment to the FP SMP.	BJC/SA1a-4	SA1a	June 30, 2002
	Revise BJC-FP-2001 FP Program Description to incorporate functional direction for combustible loading limitations and controls for ignition sources as well as integration of Fire Hazards Analysis (FHAs) into DSAs, pre-fire planning, emergency response training and drills.	BJC/SA1a-5	SA1a	September 30, 2002
	Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards. (These DSA guides will include an integrated hazards analysis process, and separate guides for Fire Hazards Assessments and EM Hazard Assessments.)	BJC/SA1a-6	SA1a	May 31, 2002

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-10</b>                      AB for EM facilities were administered for many years on a decentralized basis without an integrated, central document control and record management process, resulting in difficulties in identifying and assuring completeness of AB documents. While actions have been taken to strengthen the document control and records management process for AB documents, further improvement is needed.</p>	Develop a company-wide procedure for conducting Fire Protection Engineering Assessment (FPEA).	BJC/SA1a-7	SA1a	September 30, 2002
	Evaluate the adequacy of FP requirements in BJC subcontract pro forma and revise pro forma as needed.	BJC/SA1a-8	SA1a	September 30, 2002
	Obtain necessary resources to support FP SME to evaluate and disposition results from SMP assessments regarding combustible loading and ignition controls.	BJC/SA1a-9	SA1a	April 30, 2002
	Develop a GM level Charter for Security, Fire and Emergency Management (SF&EM) Functional Organization describing Roles and Responsibilities.	BJC/SA1a-10 BJC/SA1a-24	SA1a	June 30, 2002
	Reassess the SF&EM Organization and identify FY 2003 budget authority to staff organization for deploying FP program functional personnel to projects.	BJC/SA1a-11	SA1a	June 30, 2002
<b>EMERGENCY MANAGEMENT PROGRAM</b>				
<p><b>CF/BJCSB-15</b>                      SMP descriptions in traditional AB document structures (SARs, BIOs, etc.) were not adequately developed and applied to many EM facilities and activities. Many reflected descriptions of program implemented by the previous contractor.</p>	Conduct Assessments of FP&EM SMP implementation to supplement SB flowdown. Document Results. Define Corrective Actions and enter into ICATS.	BJC/SA1a-19	SA1a	April 30, 2002
	Conduct emergency management SME assessments as determined to be needed based on results from EM SMP Assessments.	BJC/SA1a-20	SA1a	August 30, 2002
	Revise the BJC Emergency Management Program Description to include (1) the requirement for BJC Projects to see that occupants of facilities receive training on emergency alarm recognition, evacuation routes, and location of assembly stations, (2) the requirement that an annual building evacuation be conducted, and (3) integration of Emergency Management Hazard Analysis (EMHA) with DSAs into emergency response training and drills.	BJC/SA1a-21	SA1a	June 30, 2002

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date	
	Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards. (These DSA guides will include an integrated hazards analysis process, and separate guides for Fire Hazards Assessments and Emergency Management Hazard Assessments.)	BJC/SA1a-22	SA1a	May 31, 2002	
	Obtain necessary resources to support EM SME evaluate and disposition results from EM SMP Assessments.	BJC/SA1a-23	SA1a	April 30, 2002	
	Develop a GM level Charter for SF&EM Functional Organization describing Roles and Responsibilities (Duplicate #10).	BJC/SA1a-24	SA1a	June 30, 2002	
	Reassess the SF&EM Organization and identify FY 2003 budget authority to staff organization for deploying emergency management functional personnel to projects (Duplicate BJC/SA1a-11).	BJC/SA1a-25	SA1a	June 30, 2002	
	<b>HAZARDOUS MATERIAL PROTECTION</b>				
	Develop a SMP description for Hazardous Material Protection.	BJC/SA1a-26	SA1a SA1b	April 16, 2002	
	Include in ES&H management assessment process provision for conduct of periodic scheduled management assessments of the industrial safety and industrial hygiene programs.	BJC/SA1bA-27	SA1b	March 12, 2002 (complete)	



Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Conduct assessment of chemical vulnerabilities in conjunctions with the BJC Chemical SMP initiative. This initiative includes following: BJC facilities than have or maintain hazardous materials in quantities greater than the threshold quantities identified in 40 CFR 302 and of facilities with hazard level $\geq 2$ as defined by National Fire Protection Association (NFPA) 45.B-2.3 or 49 CFR 173.2, Division 1.1, 1.2, 1.3 or explosives > 45 g of Division 1.4 explosives in one area	BJC/SA1bC-30	SA1b	January 31, 2002 (complete)
	Obtain DOE approval for prioritized chemical vulnerability list.	BJC/SA1bC-31	SA1b	April 2, 2002 (complete)
<b>CONDUCT OF OPERATIONS PROGRAM</b>				
	Complete a Conduct of Operations SME Qualifications package. The package provides documentation that the SME possesses unique experience and expert knowledge in selected technical, functional, and/or process areas.	BJC/SA1bB-32	SA1b	March 21, 2002 (complete)
	Communicate upcoming "Conduct of Operations" initiative to MOPs and FMs.	BJC/SA1bB-33	SA1b	April 1, 2002 (complete)
	Perform a crosswalk matrix between DOE Order 5480.19 and applicable BJC procedures, policies and pro-forma documents.	BJC/SA1bB-34	SA1b	April 30, 2002
	Develop a Conduct of Operations Program Description Document. The Conduct of Operations Description document will address BJC Standards and expectations, Line management involvement in field activities and the BJC approach for achieving appropriate Rigor in all aspects of worked performed at BJC locations.	BJC/SA1bB-35	SA1b	April 30, 2002

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Collect, review and provide feedback on Completed Applicability Matrices submitted by subcontractors to date. Communicate weaknesses and needed changes to affected MOPS and Deputies.	BJC/SA1bB-36	SA1b	April 30, 2002
	Develop Conduct of Operations Awareness and orientation materials. Conduct of Operations Awareness session material will include the BJC and DOE expectations for Conduct of Operations and a review of the 18 Conduct of Operations elements. The review will help work groups interpret the intent of each specific Conduct of Operations element and provide assistance on the application of these elements. Key BJC and Subcontractor employees will attend awareness sessions.	BJC/SA1bB-37	SA1b	April 30, 2002
	Develop a schedule for delivering Conduct of Operations Awareness sessions to Key BJC and subcontractor personnel at all BJC locations. Schedule will specify names (or positions) of attendees and the date, time and location of each session.	BJC/SA1bB-38	SA1b	April 30, 2002
	Deliver "Conduct of Operations" Awareness Sessions to key BJC and subcontractor employees identified on schedule developed in BJC/SA1bB-35.	BJC/SA1bB-39	SA1b	May 15, 2002
	Review and revise as necessary BJC procedure BJC-PQ-1710 "Discipline and Rigor In Operating Facilities" to ensure compliance with DOE Order 5480.19 "Conduct of Operations Requirements for DOE Facilities".	BJC/SA1bB-40	SA1b	June 15, 2002
	Review and Revise BJC subcontract Pro-Forma documents as necessary to flow-down applicable Conduct of Operations Requirements to subcontractors.	BJC/SA1bB-41	SA1b	June 15, 2002

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Lead and Assist BJC projects and subcontractors during the Conduct of Operations Applicability Matrix Review and development of Conduct of Operations Improvement Plans. This specialized assistance will assure that a graded approach is used in the application of Conduct of Operations Principles to assure that the depth of detail required and extent of dollars expended are commensurate with the project's programmatic importance and potential ES&H impact.	BJC/SA1bB-42	SA1b	July 20, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-43	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-44	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-45	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-46	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-47	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-48	SA1b	July 31, 2002
	Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.	BJC/SA1bB-49	SA1b	July 31, 2002

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Assess Conduct of Operations effectiveness. A Performance-based evaluation of ongoing activities will be conducted to determine if appropriate levels of rigor are being successfully applied to BJC Work activities.	BJC/SA1bB-50	SA1b	August 15, 2002
	Determine a method for tracking Applicability Matrix actions to closure.	BJC/SA1bB-51	SA1b	June 1, 2002
	Develop a process and Track "Conduct of Operations" performance measures.	BJC/SA1bB-52	SA1b	July 20, 2002
	Conduct an integrated Conduct of Operations/ISM assessment.	BJC/SA1bB-53	SA1b	November 8, 2002
<b><i>DRUM OVERPRESSURIZATION</i></b>				
	Suspend Waste Disposition Project drum handling opening activities as a result of two over pressurized waste containers.	BJC/SA1a-57	SA2a	January 28, 2002 (complete)
	Modify subcontractor-operating procedures to require: lid-retaining webs to be used for opening any non-vented open top drums. Drums in storage containing transuranic (TRU) waste were evaluated and determined to have High Efficiency Particulate Air (HEPA) filters installed to prevent over pressurization.	BJC/SA1a-58	SA2a	February 18, 2002 (complete)
	Evaluate waste characterization data (Form 2109s) for waste matrices that exhibit gas generation potential. For drums that are found to exhibit gas generation potential, prepare specific Activity Hazards Analysis (AHAs) prior to opening.	BJC/SA2a-59	SA2a	February 18, 2002 (complete)
	Implement a safety stand down for all projects to review hazard controls for opening of waste containers.	BJC/SA2a-60	SA2a	February 8, 2002 (complete)

**Table 5.4-2 BJC Corrective Actions for SMP Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
	Add evaluation of waste matrices to hazard screenings in SB documents.	BJC/SA2a-61	SA2a	May 31, 2002
	Ensure open-top drum handling and opening requirements are consistent for all subcontractors performing these activities for BJC organizations that may perform these activities. [I/CATS 5030]	BJC/SA2a-62	SA2a	May 31, 2002
	Ensure a process is in place to ensure corrective measures are instituted to address bulging/over-pressurized drums identified by any BJC organization or their subcontractor(s). [I/CATS 5031]	BJC/SA2a-63	SA2a	June 14, 2002
<b>OTHER CORRECTIVE ACTIONS</b>				
	Thirty-seven of 40 corrective actions have been completed. The remaining actions are being tracked in I/CATS and are tied to implementation of the Facility Authorization Tool-Container Analysis Tool (FATCAT) database. BJC has a NCS implementation plan and is on track to complete all actions by the close of FY 2002.	BJC/SA1a-16	SA1a	September 30, 2002
	Completed (R/CAAS TSR) February 12, 2002, DOE SER issued with "no conditions of approval."	BJC/SA1a-17	SA1a	February 12, 2002 (complete)
	Perform root cause analysis and determine corrective action(s).	BJC/SA3a-64	SA3a	November 2, 2002 (complete)
	Submit update to NTS report to reflect information from SB flowdown assessments and DOE HQ AB review with expanded corrective actions.	BJC/SA3a-68	SA3a	April 12, 2002
	Develop standard SMP descriptions.	BJC/MG3d-71 BJC/SB4b-111	MG3d SB4b	May 1, 2002

**Table 5.4-3 BJC Corrective Actions for SB Process Improvements**

**DNFSB AREA OF CONCERN:** Safety Basis

**ISSUE(S):** Development, maintenance, and implementation of SB documents has not been managed to consistently assure adequate implementation.

**ROOT CAUSE:** The DOE-ORO and BJC process and organizational alignment for management of AB documents has not been fully integrated, nor well documented.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-1</b> Facility safety documents were developed by multiple organizations from multiple prime contractors at five sites over many years to varying standards/procedures with varying DOE expectations, reviewers, and review processes.</p> <p><b>CF/BJCSB-2</b> Expectations and requirements with respect to AB and facility hazard document development, maintenance, and implementation have evolved and changed from DOE orders to WSS to 10 CFR 830 Subpart B, while the base documents have remained unchanged. "Old" documents are sometimes reviewed per new standards and found lacking.</p>				
	Assign the Nuclear Facility Safety Functional Manager to report to the Deputy General Manager.	BJC/MG5c-76	MG5c	December 1, 2001 (complete)
	Implement a SB Review Board	BJC/MC3-1	NA	December 19, 2001 (complete)

**Table 5.4-3 BJC Corrective Actions for SB Process Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-3</b> Traditional AB document structures (SARs , BIOs etc.) and associated safety analysis requirements, e.g., natural phenomena, were developed/designed for operating facilities and have not been “readily applicable” to many EM facilities (shutdown, inactive facilities, burial grounds, contaminated sites, etc.) and activities (facility S&amp;M, environmental remediation, D&amp;D, etc.). Many of these issues will be resolved as documents are updated to 10 CFR 830, Subpart B, Safe Harbor Methodology.</p>				
	<p>Establish a joint BJC/DOE-ORO SB Working Group.</p>	<p>BJC/MG5c-77</p>	<p>MG5c</p>	<p>February 15, 2002 (complete)</p>
<p><b>CF/BJCSB-4</b> In some instances, the technical basis supporting AB documents is not clearly documented and does not meet current expectations.</p>				
	<p>Obtain DOE-ORO approval of BJC USQD procedure and issue procedure.</p>	<p>BJC/MG9a-89</p>	<p>MG9a</p>	<p>May 30, 2002</p>
<p><b>CF/BJCSB-5</b> Updating AB documents has been viewed by some DOE, BJC, and subcontractor personnel to be lesser importance for some EM facilities due to their shutdown, inactive status and planned disposition, resulting in a lack of rigor in AB management and implementation.</p>				
	<p>Conduct an independent review of the AB management process/program to assess its technical adequacy and to more clearly identify areas needing improvement.</p>	<p>BJC/MC4-1</p>	<p>NA</p>	<p>March 1, 2002 (complete)</p>
<p><b>CF/BJCSB-6</b> While AB documents, i.e., SARs and BIOs, have been maintained via the USQD process, periodic updates/revisions have not been processed, resulting in some AB documents having numerous USQDs and being difficult to understand, implement, and utilize.</p>				

**Table 5.4-3 BJC Corrective Actions for SB Process Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-8</b> The M&amp;I contract did not require formal updates to AB documents as a part of contract transition. Additionally, the BJC contract transition plan did not include provisions for formal AB document revisions to bring documents up-to-date for new prime contract conditions. Document updates were made via the USQD process.</p> <p><b>CF/BJCSB-9</b> The basis for facility categorization developed by the prior prime contractor, has not been maintained current, and have not been well understood by DOE-ORO and BJC managers. Although the due diligence report submitted by BJC in October 1998 identified that the AB documents had been prepared by the prior contract and not BJC, DOE-ORO EM and BJC relied on the adequacy of those documents for continued EM activities.</p> <p><b>CF/BJCSB-10</b> AB for EM facilities were administered for many years on a decentralized basis without an integrated, central document control and record management process, resulting in difficulties in identifying and assuring completeness of AB documents. While actions have been taken to strengthen the document control and records management process for AB documents, further improvement is needed.</p>				
	Develop and issue BJC Nuclear Safety Assurance Policy to clarify expectations and to further define roles and responsibilities.	BJC/MG3d-70 BJC/MG4a-72 BJC/MG5c-75	MG3d MG4a MG5c	April 1, 2002
	Develop an integrated DOE-ORO EM/BJC process flowchart and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards	BJC/SA1a-6 BJC/SA1a-22 BJC/MG11-92 BJC/SB1a-98 BJC/SB4b-110 BJC/SB6a-115	SA1a MG11 SB1a SB4b SB6a	May 31, 2002
Define and implement additional improvements to the document control and records management system for AB documents.	BJC/MG5c-80 BJC/SB1b-100	SB1b MG5c	March 21, 2002 (complete)	



**Table 5.4-3 BJC Corrective Actions for SB Process Improvements (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-11</b> The DOE-ORO and BJC processes for administering AB documents has not been effective in managing interfaces. There was a lack of a consistent interface protocol, i.e., AB document submittals were from multiple points in BJC to multiple points in DOE-ORO EM, resulting in "lost" documents and difficulties in DOE tracking, review, and approval.</p> <p><b>CF/BJCSB-12</b> DOE-ORO lacked a defined organization, process, and procedures for consistently administering and managing the AB process, documents, and reviews. In some cases, communications between BJC and DOE-ORO have not been effective to assure timely resolution of AB-related issues and comments.</p>	<p>Develop new BJC hazard identification, facility categorization, and inventory control procedure/document, compliant with governing standards.</p>	<p>BJC/SA1a-12 BJC/SB5a-112</p>	<p>SA1d SB5a</p>	<p>July 1, 2002</p>
	<p>Revise BJC-NS-1002 to include joint DOE and BJC DSA review points.</p>	<p>BJC/MG11-93 BJC/MG11-94</p>	<p>MG11</p>	<p>July 1, 2002</p>
	<p>Develop corporate level DSA application guides for use in development of 10 CFR 830 compliant DSAs and graded safety documents for less than category 3 facilities.</p>	<p>BJC/SB2a-102 BJC/SB3d-108 BJC/SB4b-109</p>	<p>SB2a SB3d SB4b</p>	<p>May 31, 2002</p>

Table 5.4-3 BJC Corrective Actions for SB Process Improvements (continued)

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-15</b> SMP descriptions in traditional AB document structures (SARs, BIOs, etc.) were not adequately developed and applied to many EM facilities and activities. Many reflected descriptions of program implemented by the previous contractor.</p>	<p>Revise and issue proforma contract Exhibit E to make BJC procedures for Nuclear Safety and NCS mandatory for subcontractors. Issue directed change to subcontractors responsible for Category 2 and 3 Facilities to comply with the new Nuclear Safety Technical Specification, Exhibit E-1.</p>	<p>BJC/MG4b-74 BJC/MG9a-90 BJC/MG9a-91 BJC/MG11-95 BJC/MG11-96</p>	<p>MG4b MG9a MG11</p>	<p>July 1, 2002 July 1, 2002 September 30, 2002 July 1, 2002 July 1, 2002</p>
	<p><b>CF/BJCSB-16</b> BJC and subcontract managers were not held accountable in rigorously exercising nuclear safety roles, responsibilities, and authorities in facilities many of which had transitioned from their original missions to S&amp;M without approved updates to the SB documents.</p>	<p>Develop standard SMP descriptions.</p>	<p>BJC/MG3d-71 BJC/SB4b-111</p>	<p>MG3d SB4b</p>
<p><b>CF/BJCSB-17</b> BJC and subcontractors have not implemented a uniform set of requirements in the respective USQD process documents.</p>				
<p><b>CF/BJCSB-18</b> The flow-down of SB requirements into BJC and subcontractor procedures was not rigorously administered.</p>	<p>Update BJC performance review process for line managers to include evaluation criteria for nuclear safety.</p>	<p>BJC/MG4a-73</p>	<p>MG4a</p>	<p>July 31, 2002</p>

**Table 5.4-4**

**BJC Corrective Actions for SB Updates and Upgrades**

**DNFSB AREA OF CONCERN:**

Safety Basis

**ISSUE(S):**

Development, maintenance, and implementation of SB documents has not been managed to consistently assure adequate implementation.

**ROOT CAUSE:**

The DOE-ORO and BJC processes and organizational alignment for management of AB documents has not been fully integrated, nor well documented.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-2</b> Expectations and requirements with respect to AB and facility hazard document development, maintenance, and implementation have evolved and changed from DOE orders to WSS to 10 CFR 830 Subpart B, while the base documents have remained unchanged. "Old" documents are sometimes reviewed per new standards and found lacking.</p> <p><b>CF/BJCSB-3</b> Traditional AB document structures (SARs , BIOs etc.) and associated safety analysis requirements, e.g., natural phenomena, were developed/designed for operating facilities and have not been "readily applicable" to many EM facilities (shutdown, inactive facilities, burial grounds, contaminated sites, etc.) and activities (facility S&amp;M, environmental remediation, D&amp;D, etc.). Many of these issues will be resolved as documents are updated to 10 CFR 830, Subpart B, Safe Harbor Methodology.</p> <p><b>CF/BJCSB-4</b> In some instances, the technical basis supporting AB documents is not clearly documented and does not meet current expectations.</p>				
	Establish a joint BJC-DOE-ORO SB Working Group.	BJC/MC5c-77	MG5c	February 15, 2002 (complete)
	Generic technical issues associated with DSA development will be addressed by the joint BJC/DOE SB Working Group, with guidance documents issued regarding DSA development as determined to be needed. This guidance will supplement the DSA guides being developed.	BJC/SB2b-104	SB2b	September 30, 2002

Table 5.4-4

BJC Corrective Actions for SB Updates and Upgrades (continued)

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-5</b> Updating AB documents has been viewed by some DOE, BJC, and subcontractor personnel to be lesser importance for some EM facilities due to their shutdown, inactive status and planned disposition, resulting in a lack of rigor in AB management and implementation.</p>				
	Develop a Paducah CAP and basis for remediation of NCS restricted areas in C-410.	BJC/SB1a-99	SB1a	March 12, 2002 (complete)
<p><b>CF/BJCSB-6</b> While AB documents, i.e., SARs and BIOs, have been maintained via the USQD process, periodic updates/revisions have not been processed, resulting in some AB documents having numerous USQDs and being difficult to understand, implement, and utilize.</p>				
	Submit updated BJC 10 CFR 830 Implementation Plan to DOE.	BJC/SA3a-67 BJC/SB3b-106 BJC/MG5c-78 BJC/SB2a-103 BJC/SB3c-107	SA3a SB3b MB5c SB2a	April 10, 2002 (complete)
<p><b>CF/BJCSB-7</b> DOE and BJC have been reluctant to expend resources to update AB document for shutdown, inactive facilities planned for demolition/disposition/remediation.</p>				
<p><b>CF/BJCSB-8</b> The M&amp;I contract did not require formal updates to AB documents as a part of contract transition. Additionally, the BJC contract transition plan did not include provisions for formal AB document revisions to bring documents up-to-date for new prime contract conditions. Document updates were made via the USQD process.</p>	Complete annual update for Authorization Agreements	BJC/MC5-1	NA	May 31, 2002

Table 5.4-4

## BJC Corrective Actions for SB Updates and Upgrades (continued)

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCSB-9</b> The basis for facility categorization developed by the prior prime contractor, has not been maintained current, and have not been well understood by DOE-ORO and BJC managers. Although the due diligence report submitted by BJC in October 1998 identified that the AB documents had been prepared by the prior contract and not BJC, DOE-ORO EM and BJC relied on the adequacy of those documents for continued EM activities</p> <p><b>CF/BJCSB-11</b> The DOE-ORO and BJC processes for administering AB documents has not been effective in managing interfaces. There was a lack of a consistent interface protocol, i.e., AB document submittals were from multiple points in BJC to multiple points in DOE-ORO EM, resulting in "lost" documents and difficulties in DOE tracking, review, and approval.</p>	For all BJC Category 3 facilities, issue to DOE for approval an updated hazards assessment document with updated basis for hazard categorization.	BJC/SB5a-113	SB5	April 10, 2003
	For "suspect" radiological facilities, issue to DOE for approval an updated hazards assessment document with updated basis for hazard categorization.	BJC/SB5a-114	SB5	August 1, 2002
	Annual updates and/or 10 CFR 830 compliant upgrades are being processed to achieve compliance with the requirements of 10 CFR 830 Subpart B.	BJC/SB3a-105	SB3a	April 10, 2003

## 5.2 DOE ORDERS OF INTEREST

Both the DNFSB letter and the DOE-HQ Independent Assessment identified the need to re-evaluate the BJC contract WSS against other DOE nuclear safety requirements. DOE-ORO and BJC initiated a review of the WSS contract requirements focusing on the 109 directives specified in the DNFSB letter. The initial review indicated that several applicable nuclear safety directives should be added to the contract. In a February 28, 2002 letter to DOE-ORO, BJC identified the following four directives for immediate incorporation into the contract via a Type 1 WSS revision:

- DOE O 420.1, Change 3, Facility Safety Section 4.2, Fire Protection (FP)
- DOE O 5480.19, Change 1, Conduct of Operations Requirements for DOE Facilities
- DOE O 5480.20A, Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities
- DOE-STD-1120-98, Integration of Environment, Safety and Health (ES&H) into Facility Disposition Activities

Concurrent with the above activity DOE-ORO and BJC completed a review of the remaining directives. As a result of the review DOE requested a Type 1 WSS revision for 17 directives and a Type 2 WSS Revision for 4 directives. The following is a listing of the specific orders.

### Type 1 WSS Revision Listing

- DOE O 151.1A – Comprehensive Emergency Management Plan
- DOE O 210.1, Change 2 – Performance Indicators and Analysis of Operations Information
- DOE O 225.1A - Accident Investigations
- DOE O 231.1, Change 2 – ES&H Reporting
- DOE O 414.1A, Change 1 – Quality Assurance
- DOE O 425.1B – Startup and Restart of Nuclear Facilities
- DOE O 440.1A – Worker Protection Management
- DOE O 5400.1, Change 1 - General Environmental Protection Program
- DOE O 5400.5, Change 2 – Radiation Protection of the Public and Environment
- DOE P 441.1 – Radiological Protection for DOE Activities
- DOE P 450.2A – Identifying, Implementing, and Complying with ES&H Requirements
- DOE P 450.3 – Authorizing Use of the Necessary and Sufficient Process for Standards-Based ES&H
- DOE P 450.5 – Line ES&H Oversight
- DOE P 450.6 – Secretarial Policy Statement on ES&H
- 10 CFR 830 Subpart A – Quality Assurance Requirements
- 10 CFR 830 Subpart B – Nuclear Safety Management
- DOE O 420.1, Change 3, Section 4.4 - Facility Safety – Natural Phenomena Hazards Mitigation

### Type 2 WSS Revision Listing

- DOE O 433.1 – Maintenance Management Program for DOE Nuclear Facilities
- DOE O 460.1A – Packaging and Transportation Safety
- DOE O 460.2 – Departmental Materials Transportation and Packaging Management
- DOE O 5480.4 – Environmental Protection, Safety and Health Protection Standards

In addition, an assessment of the WSS change process was initiated to evaluate the focus on assessments against contractual requirements to the exclusion of DOE requirements.

The flow diagram in Figure 5.2 outlines the general approach following in reviewing the orders of interest.

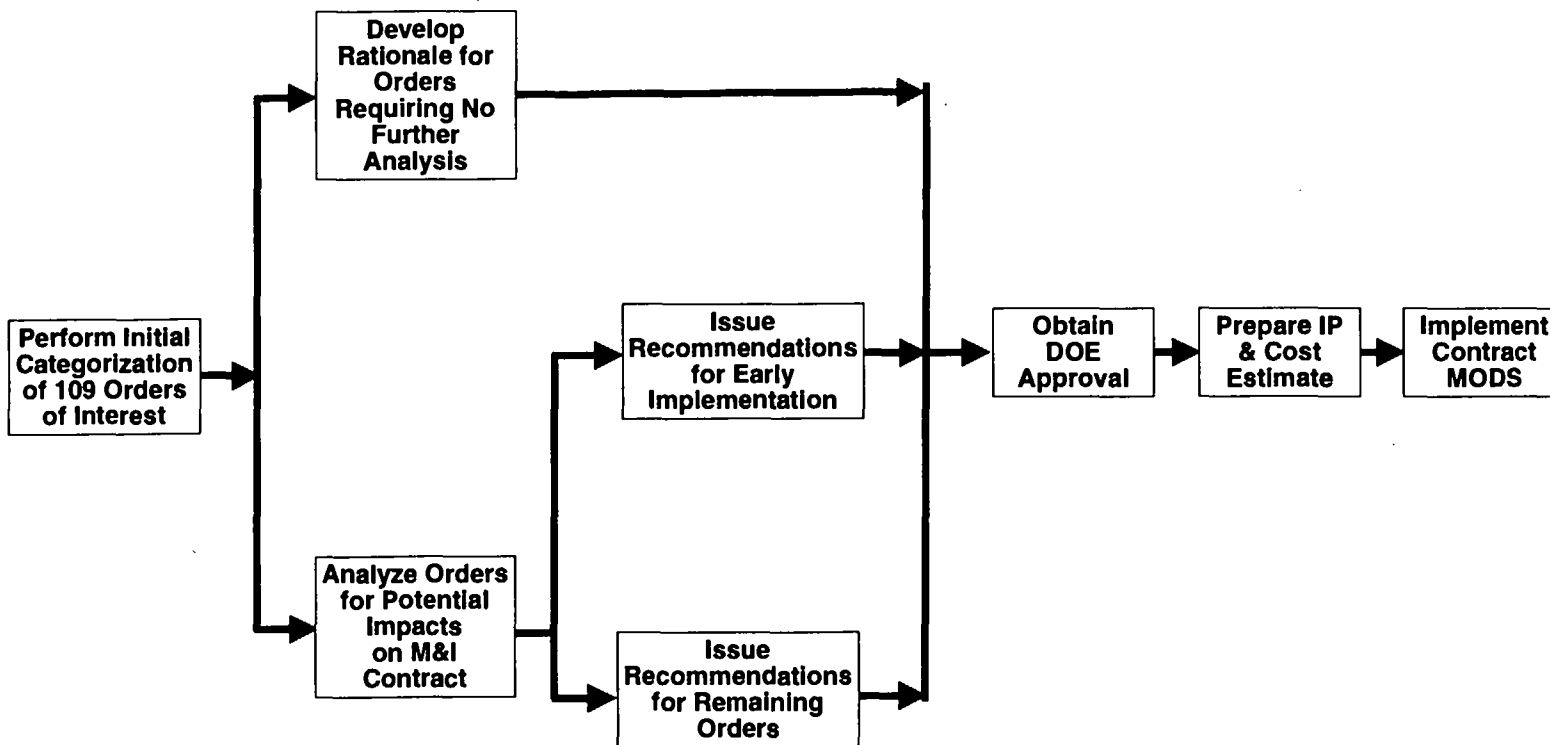
#### **5.2.1 DOE Corrective Actions**

DOE corrective actions are summarized in Table 5.5. Appendix A provides further detail for these corrective actions.

#### **5.2.2 BJC Corrective Actions**

BJC corrective actions are summarized in Table 5.6. Appendices B and C provide further detail for these corrective actions.

Figure 5.2 Evaluation of Orders of Interest





**Table 5.5 ORO Corrective Actions for WSS**

**DNFSB AREA OF CONCERN:** Orders of Interest

**ISSUE(S):** DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS.

**ROOT CAUSE(S):** The belief that the nuclear safety risks for the BJC work were not significant.

<b>Contributing Factors</b>	<b>Corrective Action Description</b>	<b>Corrective Action Number</b>	<b>DOE-HQ IA Reference(s)</b>	<b>Completion Date</b>
<b>CF/ORSB-1</b> Exclusion of applicable DOE nuclear safety requirements in the BJC contract.	Re-evaluate the existing BJC WSS set.	OR/MG6-1	MG6	March 29, 2002 (complete)
<b>CF/OROI-1</b> Belief that nuclear safety risks were not significant for BJC work.	Modify the BJC WSS set, as appropriate.	OR/MG6-2	MG6	December 6, 2002
<b>CF/OROI-2</b> 10 CFR 830, Subpart B, SB Requirements did not exist.	Determine adequacy of ORO WSS development process and implement any necessary upgrades.	OR/MG6-3	MG6	May 31, 2002
<b>CF/OROI-3</b> No formal consequences for omitting nuclear safety requirements from the WSS.	Ensure incorporation of DOE O 420.1 in BJC WSS, as appropriate.	OR/SB7-1	SB7	March 29, 2002 (complete)
<b>CF/OROI-4</b> DOE Manual 450.3-1 <i>The DOE Closure Process for Necessary and Sufficient Sets of Standards</i> allows omission without formal justification.				

**Table 5.6 BJC Corrective Actions for WSS**

**DNFSB AREA OF CONCERN:** Orders of Interest

**ISSUE(S):** DOE Orders of Interest important to nuclear safety were not included as requirements in the M&I contract WSS.

**ROOT CAUSE:** The WSS process failed to identify an adequate set of nuclear safety standards.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCOI-1</b> Lack of a process to periodically evaluate the completeness of the WSS to accomplish the BJC scope.</p> <p><b>CF/BJCOI-2</b> BJC assessments did not identify gaps related to DOE nuclear safety directives.</p>	Review 109 orders of interest to DNFSB against BJC contract and submit to DOE.	BJC/MG6a-82	MG6a	February 28, 2002 (complete)
	Submit Type 1 WSS revisions for applicable WSS sets based on the recommendations forwarded via 2 BJC letters dated 2/28/02 and DOE letter dated 3/8/02.	BJC/MG6a-83	MG6a	March 31, 2002 (complete)
	Submit Type 2 WSS revision for applicable WSS sets based on the recommendations forwarded via 2 BJC letters dated 2/28/02 and DOE letter dated 3/8/02.	BJC/MG6a-84	MG6a	April 30, 2002
	Perform management assessment of the WSS process and prepare CAP by 6/30/02.	BJC/MG6a-85	MG6a	June 30, 2002
	Submit implementation plan to DOE.	BJC/MG6a-86	MG6a	August 30, 2002
	Modify the M&I contract to incorporate DOE Order 420.1, Section 4.2, FP, into BJC contract WSS.	BJC/SA1a-3	SA1a	February 28, 2002 (complete)

### **5.3 TECHNICAL COMPETENCE**

As discussed in Section 2.7, BJC conducted a baseline assessment of the qualifications program for nuclear facility personnel, "Management Assessment Report, BJC Nuclear Facilities Qualification Program," MA-02-HR-SP-001, January 15, 2002. Training and qualifications issues were also raised by the DNFSB staff, by the DOE-HQ Independent Assessment, in the NTS report, NTS-ORO-BJC-BJCPM-2001-0004, and in the ISMS OFI.

The flow diagram presented in Figure 5.3 outlines the general approach BJC utilized in the training and qualification program improvement process. The causal factors were discussed in Section 4.0 of this report.

Subsequent to the baseline management assessment, an analysis was performed to determine areas needing improvement in the existing qualification programs. This analysis focused on key positions within the BJC nuclear facilities. The analysis resulted in the development of new training requirements and additional training courses. The management assessment also identified the need to better define the qualification requirements of key subcontractor positions.

An evaluation of the staffing for nuclear facility safety personnel identified the need for additional nuclear safety technical staff.

Corrective actions were developed to address findings and recommendations. These actions include addition of the DOE Training Order 5420.2a, "Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities," to the BJC contract WSS.

#### **5.3.1 DOE**

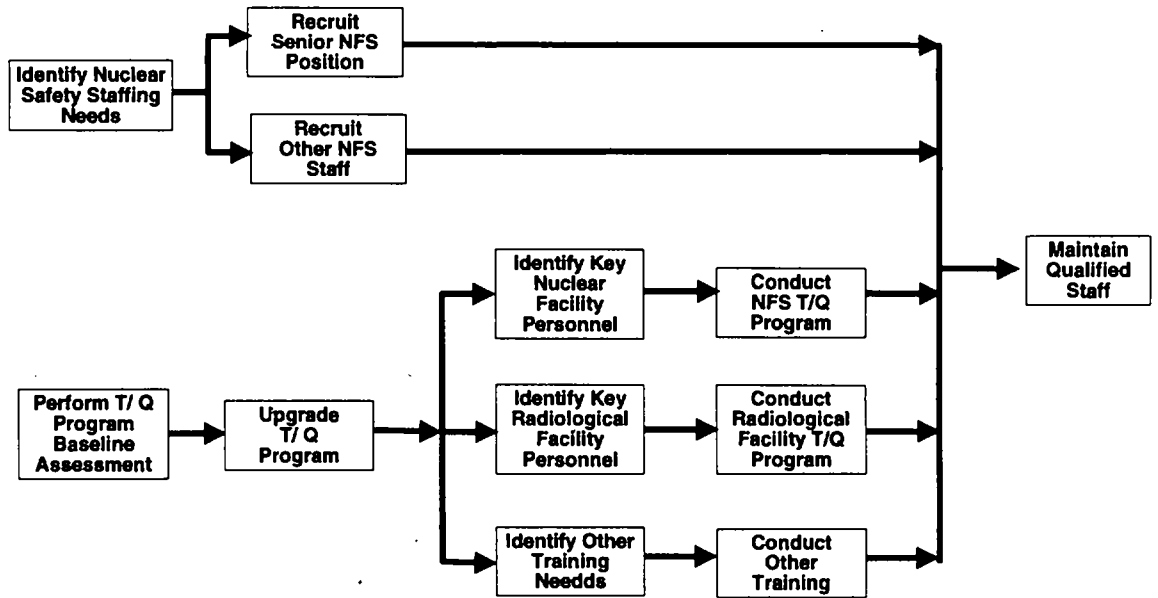
DOE-ORO has determined that there is insufficient staff expertise to effectively exercise nuclear safety management responsibilities in the EM program. Further, the ORO NSD has experienced staffing losses, which have impacted the ability to support SB reviews and approvals. In addition to staff augmentation DOE-ORO has instituted some training programs to improve the knowledge of EM program managers responsible for nuclear facilities.

Corrective actions are summarized in Table 5.7. Appendix A provides further detail for these actions.

#### **5.3.2 BJC Technical Competence Corrective Action and Improvements**

Corrective actions are summarized in Table 5.8. Appendices B and C provide further detail for these actions.

Figure 5.3 Training & Qualification Improvements Process



**Table 5.7 ORO Corrective Actions for Technical Competence**

**DNFSB AREA OF CONCERN:** Technical Competence

**ISSUE(S):** Inadequate technical expertise in ORO to manage the SB for nuclear facilities.

- ROOT CAUSE(S):**
- The belief that the nuclear safety risks for the BJC work were not significant.
  - Lack of management accountability and consequences for not having approved SB documents.

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<b>CF/ORTC-1</b> ORO-wide staffing reductions and hiring limitations due to budget cuts.	Interim: Use details and support service contractors to augment staff while defining ORO SB process and evaluating work load based on process.	OR/MG2-1	MG2	April 30, 2002
	Reevaluate staffing analysis based on current organizational expectations for AMEM, AMESH, AML, and AMAU.	OR/MG2-2 OR/MG2-3 OR/MG2-4 OR/MG2-5	MG2	May 31, 2002
<b>CF/ORTC-2</b> Staff changes in NSD. Positions were lost along with people. Two people retired, two promoted, and two made lateral position moves.	Make sufficient qualified staffing available and develop contingency plan if minimum staffing is not achievable.	OR/MG2-6	MG2	November 1, 2002
	Include periodic SB program assessments in an ORO Annual Assessment Plan	OR/MG7-1	MG7	May 31, 2002
	Conduct an assessment of the EM FR program.	OR/MG7-2	MG7	April 12, 2002
	Conduct an assessment of ORNL FR program.	OR/MG7-3	MG7	June 14, 2002
	Provide recommendations for formalization of an ORO FR program.	OR/MG7-4	MG7	June 17, 2002

**Table 5.7 ORO Corrective Actions for Technical Competence (continued)**

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/ORTC-3</b> When people leave corporate knowledge and experience is lost. Cannot hire new person until after other person has left.</p> <p><b>CF/ORSB-5</b> Insufficient technical capabilities for development, review, and management of SB documents.</p> <p><b>CF/ORSB-7</b> DOE technical support contractors used trainees and unqualified staff to prepare SB documents.</p>	Decide on desired changes relative to the ORO FR program.	OR/MG7-5	MG7	July 1, 2002
	Implement desired changes relative to the ORO FR program	OR/MG7-6	MG7	July 30, 2002
	Review and approve BJC USQD procedure and submit to HQ.	OR/MG9-1	MG9	May 1, 2002
	Verify use and effectiveness of USQD procedure by BJC and subcontractors.	OR/MG-9-2	MG9	December 1, 2002
	Conduct training needs analysis to identify personnel in need of SB knowledge (M-1 through organization)	OR/MG10-1	MG10	April 10, 2002
	Incorporate SB competency into Training and Qualifications Program (TQP) Office/Facility Specific Standards.	OR/MG10-2	MG10	April 30, 2002
	Define process for obtaining approval of qualification.	OR/MG10-3	MG10	May 31, 2002
	Review/update applicable position descriptions in AMEM, AML, AMAU, and AMESH.	OR/MG10-4 OR/MG10-5 OR/MG10-6 OR/MG10-7	MG10	May 10, 2002

**Table 5.8 BJC Corrective Actions for Technical Competence**

**DNFSB AREA OF CONCERN:**

Technical Competence

**ISSUE(S):**

- Sufficient technical expertise is not in place to accomplish responsibilities required by the SB for nuclear facilities.
- A rigorous program has not been maintained to ensure that competencies are commensurate with roles and responsibilities.

**ROOT CAUSE:**

The BJC training and qualification for personnel involved in nuclear facility operations did not meet the expectations of DOE 5480.20A, which was not included in the BJC contract.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date	
<p><b>CF/BJCTC-1</b> The lack of minimum qualification requirements permitted some personnel to be placed in positions of responsibility who did not have the requisite background and experience with the facility safety documents and the associated controls.</p> <p><b>CF/BJCTC-2</b> The lack of established minimum acceptable staffing levels allowed the transition between DOE prime contractors to occur with less than sufficient technical staffing and resources to support nuclear facility management or SB responsibilities.</p> <p><b>CF/BJCTC-3</b> Standards, policies, and procedures for staffing nuclear facilities were incomplete. In particular, the absence of standards in the area of personnel selection, training, and qualification created the shortcomings in technical competence.</p>					
	Identify critical positions supporting BJC Nuclear Facilities.	BJC/SA1a-15a	SA1a	March 18, 2002 (complete)	
	Develop qualification requirements based on the identified roles and responsibilities for nuclear facility positions.	BJC/SA1a-15b	SA1a	April 15, 2002	
	Upgrade training position descriptions with the roles and responsibilities for BJC nuclear facility critical positions.	BJC/SA1a-15c	SA1a	April 25, 2002	

**Table 5.8 BJC Corrective Actions for Technical Competence (continued)**

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/BJCTC-4</b> At the time of prime contract transition, BJC did not formally verify and document qualification of nuclear facility staff in terms of education, experience, previous qualifications, and job related training.</p> <p><b>CF/BJCTC-5</b> The reliance on industry standards for the establishment of qualification requirements contributed to failure, in some cases, to establish sufficient requirements based job responsibilities.</p> <p><b>CF/BJCTC-6</b> The process for the establishment of training and qualification requirements based on an analysis of the job requirements lacked formality.</p> <p><b>CF/BJCSB-13</b> BJC has not established minimum qualification requirements for personnel in facility management positions for nuclear category 2 and 3 facilities.</p> <p><b>CF/BJCSB-14</b> In some cases DOE-ORO EM, BJC, and subcontractor personnel with facility management responsibility for AB development and implementation have not been sufficiently familiar with AB documents, requirements, and implementation.</p>	<p>Complete the required training and qualification documentation for nuclear facility critical positions.</p>	<p>BJC/SA1a-15d</p>	<p>SA1a</p>	<p>June 26, 2002</p>
	<p>Complete baseline training and qualification improvements. (Includes incorporation of DOE Training Order 5480.20A in BJC contract)</p>	<p>BJC/MG8a-87</p>	<p>MG8a</p>	<p>October 1, 2002</p>
	<p>Conduct analysis of BJC nuclear safety staffing needs and initiate staffing actions.</p>	<p>BJC/MG8a-88</p>	<p>MG8a</p>	<p>February 1, 2002 (complete)</p>



## 5.4 ISMS CORRECTIVE ACTIONS

Declaration of ISMS implementation within ORO was deemed to be premature. Consequently, ORO ISMS Verification status was revoked by the Operations Office Manager on November 1, 2001. In February 2002, a task team was chartered to develop and facilitate implementation of: 1) an ORO Federal ISMS Program (ECD 12/02); 2) an improved methodology for conducting verification and oversight of contractor ISMS programs (ECD 9/02); and 3) an improved mechanism to write ISMS “end state attributes” into contract provisions and performance metrics (ECD 5/02).

The FY 2000 DOE ISMS verification had identified OFIs for DOE-ORO and BJC. BJC then developed and implemented corrective actions for the OFIs. An assessment of the OFI corrective actions determined that many actions had not achieved the desired results. ISMS reviews, using both internal and external resources, identified other areas requiring management attention. Based on the causal analysis described in Section 3.0, corrective actions have been identified to address the ISMS Improvements. Figure 5.3, illustrates the BJC corrective action implementation approach.

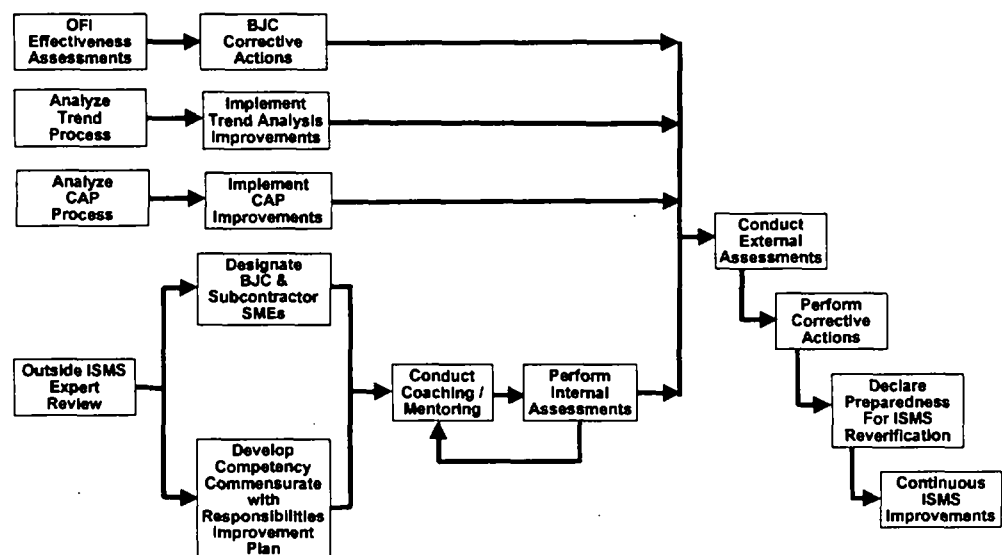
### 5.4.1 DOE ISMS Corrective Actions

Corrective actions are summarized in Table 5.9. Appendix A provides further detail for these actions.

### 5.4.2 BJC ISMS Corrective Actions

Corrective actions are summarized in Table 5.10. Appendices B and C provide further detail for these actions.

Figure 5.4 BJC ISMS Improvements



**Table 5.9 ORO Corrective Actions for ISMS Improvements**

**DNFSB AREA OF CONCERN:**

ISMS

**ISSUE(S):**

Declaration of ISMS verification may have been premature.

**ROOT CAUSE(S):**

Lack of management priority and accountability for closing the ISM system deficiencies.

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/ORIS-1</b> No centralized ORO CAT and reporting system to bring open issues to management's attention and ensure closeout of ISM System verification findings.</p> <p><b>CF/ORIS-2</b> No performance standards were set for successful completion.</p>	Issue ORO dispute resolution process.	OR/MG3-1	MG3	May 31, 2002
	Assign resources to issues management system (IMS) development team.	OR/MG3-2	MG3	April 4, 2002 (complete)
	Define IMS requirements.	OR/MG3-3	MG3	May 2, 2002
	Procure/develop software.	OR/MG3-4	MG3	July 11, 2002
	Document ORO issues management process.	OR/MG3-5	MG3	July 25, 2002
	Train personnel on IMS use.	OR/MG3-6	MG3	September 9, 2002
	Issue ORO IMS process.	OR/MG3-7	MG3	September 30, 2002
	Populate IMS with AMEM, AMESH, AMAU, and AML data.	OR/MG3-8 OR/MG3-9 OR/MG3-10 OR/MG3-11	MG3	November 1, 2002

Table 5.9 ORO Corrective Actions for ISMS Improvements (continued)

Contributing Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<p><b>CF/ORIS-3</b> Unclear who was accountable for the ISMS.</p> <p><b>CF/ORIS-4</b> Lack of management priority and accountability for closing the findings.</p>	Close out open CATS items regarding criticality safety.	OR/SB4-5	SB4	November 1, 2002
	Conduct additional analysis of selected ORO processes to identify any changes in business practices necessary to prevent problems similar to those observed in ORO SB activities.	ORRC1-1	No	July 1, 2002
	Institute an ORO root cause analysis process that is automatically invoked when a problem or deficiency of appropriate significance is identified.	ORRC2-1	No	July 1, 2002
	Develop and issue performance standards for ISMS implementation and verification.	ORRC3-1	No	September 30, 2002
	Charter an ORO ISMS Advisory Committee to assist the Ops Office Manager in maintaining the ORO ISMS.	ORRC4-1	No	November 10, 2002
	Adopt a process for routinely bringing open issues and actions to management attention (see MG-4).	ORRC5-1	No	July 1, 2002
	Develop an ORO Federal ISMS Program.	ORRC6-1	No	October 1, 2002
	Implement ORO Federal ISMS Program.	ORRC6-2	No	March 1, 2003
	Conduct a self-assessment of ORO Federal ISMS Program implementation.	ORRC6-3	No	April 20, 2003
	Commission an independent verification of ORO Federal ISMS Program implementation.	ORRC6-4	No	June 15, 2003
	Commission an independent verification of BJC ISMS.	ORRC7-1	No	November 30, 2002

**Table 5.10 BJC Corrective Actions for ISMS Improvements**

**DNFSB AREA OF CONCERN:** ISMS

**ISSUE(S):**

- Feedback and improvement process has not been fully effective to ensure an expected degree of ISMS maturity.
- ISMS implementation by BJC failed to adequately assure ongoing effectiveness and continuous improvement.

**ROOT CAUSE:**

The maintenance of ISMS was not effective.

Causal Factors	Corrective Action Description	Corrective Action Number	DOE-HQ IA Reference(s)	Completion Date
<b>CF/BJCIS-1</b> OFI corrective actions were not effective in some areas.	Conduct assessment of the effectiveness of OFI corrective actions.	BJC/IS.1-1	No	February 1, 2002 (complete)
	Develop and implement an OFI CAP.	BJC/IS.1-2	No	May 1, 2002
<b>CF/BJCIS-2</b> Issue closure process for ISMS corrective actions did not adequately assess effectiveness.	Complete an evaluation of the BJC Issues Management trend analysis Process using Six Sigma.	BJC/IS.1-3	No	April 15, 2002
	Issue Trend Analysis CAP.	BJC/IS.1-4	No	May 10, 2002
<b>CF/BJCIS-3</b> Analysis/trending of performance data was not effective in identifying improvement opportunities.	Complete an INPO assessment of the BJC corrective action process.	BJC/IS.1-5	No	April 30, 2002
	Issue INPO CAP.	BJC/IS.1-6	No	May 24, 2002
<b>CF/BJCIS-4</b> Roles, responsibilities, and structure for SMEs were not clearly defined.	Conduct outside expert reviews of ISMS implementation.	BJC/IS.2-1	No	August 16, 2002
	Evaluate ISM progress on BJC projects.	BJC/IS.2-2	No	August 30, 2002
<b>CF/BJCIS-5</b> Indicators of ISMS weaknesses were not synthesized to enable detection of overall program deficiencies in some areas.	Develop SME program and issue new and/or revised BJC procedures, as appropriate.	BJC/IS.2-3	No	August 30, 2002
	Develop and issue BJC SME Program Management Description document.	BJC/IS.2-4	No	August 30, 2002
<b>CF/BJCIS-6</b> Lack of rigor in enforcing field implementation of existing requirements.	Ensure appointment by Functional Managers of BJC SME.	BJC/IS.2-5	No	April 30, 2002

## 6.0 PERFORMANCE MONITORING AND IMPROVEMENTS

This section describes the approaches used by DOE-ORO and by BJC to monitor performance improvements. Actions to assure CAP implementation include those to monitor implementation of corrective actions and those to assess effectiveness of implemented actions.

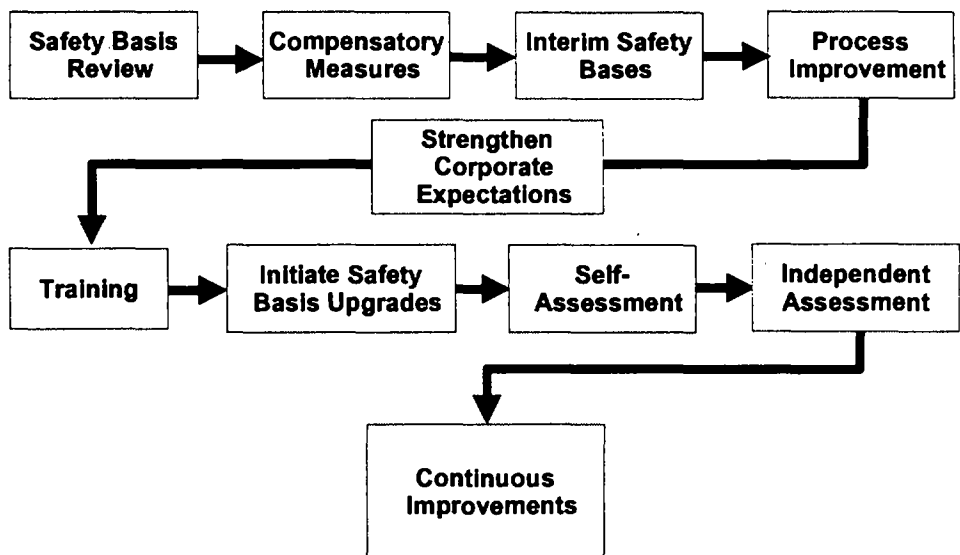
CAP implementation progress will be monitored through monthly internal reporting of action status and due dates. Additionally, DOE-ORO and BJC management will review trend analysis data each month, and will prepare monthly status reports on CAP implementation.

Actions to assess the effectiveness of implemented corrective actions will include:

- Corrective action process improvements based on the INPO guidelines will be utilized to monitor the timeliness and effectiveness of the corrective action process, including those associated with this CAP. These process improvements will complement and strengthen existing corrective action monitoring activities.
- Trend analysis process improvements will be utilized to trend performance data and to identify adverse trends.
- Assessments of nuclear safety and NCS will be performed.
- Improvements in training and qualification will be assured through the utilization and maintenance of qualification cards and credentials, with specified renewal/update requirements. Additionally, ongoing evaluations of training program implementation will be performed.
- Implementation of SME process improvements will assure ongoing SME evaluations of the adequacy and effectiveness of subject matter areas, including those related to SB and ISMS.
- The independent assessment process will continue to be used to evaluate the adequacy and effectiveness of programs and their implementation. These independent assessments routinely evaluate the effectiveness of implemented corrective actions in areas being assessed. Additionally, these assessments evaluate the effectiveness of management self-assessments performed by DOE-ORO and BJC project and Facility Managers (FMs) and by BJC subcontractors.
- WSS process improvements will be evaluated.

In addition to these feedback and improvement actions, managers will monitor implementation and improvement of ISMS corrective actions. These actions include inter-related evaluations by project managers, DOE FRs, and subcontractors to assess the effectiveness of ISMS implementation, as illustrated in Figure 6.1. Additionally, an independent external evaluation of BJC ISMS readiness will be performed prior to BJC certification to DOE-ORO of readiness for DOE verification of the BJC ISMS program. The DOE verification review of the BJC ISMS program will provide the final measure of adequacy and effectiveness of CAP implementation in correcting and prevent reoccurrence of the SB, ISMS, WSS, and technical competence issues addressed in this CAP.

**Figure 6.1 The Path Forward to ISMS Continuous Improvements**



**APPENDIX A**

**U.S. Department of Energy-Oak Ridge Operations  
Corrective Actions In Response  
to the  
Independent Safety Basis Assessment  
of  
Bechtel Jacobs Company LLC  
and  
U.S. Department of Energy  
Oak Ridge Operations Office**

**Issue MG1: Inadequate consideration was given to the management systems, processes, and technical capabilities in place when the authority for SB review and approval was delegated to ORO and then further delegated to the AMEM.**

**DESCRIPTION OF CORRECTIVE ACTION:**

- |            |   |
|------------|---|
| OR/MG1-1.  | Determine root causes for the SB issues identified and corrective actions.  |
| OR/MG1-2.  | Identify missing management systems and processes needed to adequately review and approve SB documents.                     |
| OR/MG1-3.  | Design and codify the necessary management systems and processes.   |
| OR/MG1-4.  | Issue organization-specific procedures, as needed, to implement the necessary management systems and processes (AMESH).     |
| OR/MG1-5.  | Issue organization-specific procedures, as needed, to implement the necessary management systems and processes (AMEM).      |
| OR/MG1-6.  | Issue organization-specific procedures, as needed, to implement the necessary management systems and processes (AMAU).      |
| OR/MG1-7.  | Issue organization-specific procedures, as needed, to implement the necessary management systems and processes (AML).       |
| OR/MG1-8.  | Implement organization-specific procedures, as needed, to implement the necessary management systems and processes (AMESH). |
| OR/MG1-9.  | Implement organization-specific procedures, as needed, to implement the necessary management systems and processes (AMEM).  |
| OR/MG1-10. | Implement organization-specific procedures, as needed, to implement the necessary management systems and processes (AMAU).  |
| OR/MG1-11. | Implement organization-specific procedures, as needed, to implement the necessary management systems and processes (AML).   |
| OR/MG1-12. | Verify implementation and adequacy of the necessary management systems and processes.                                       |

**DOE RESPONSIBLE PERSON:**

- |            |                 |
|------------|-----------------|
| OR/MG1-1.  | Margaret Morrow |
| OR/MG1-2.  | Margaret Morrow |
| OR/MG1-3.  | Margaret Morrow |
| OR/MG1-4.  | Robert Poe      |
| OR/MG1-5.  | Gerald Boyd     |
| OR/MG1-6.  | Robert Brown    |
| OR/MG1-7.  | George Malosh   |
| OR/MG1-8.  | Robert Poe      |
| OR/MG1-9.  | Gerald Boyd     |
| OR/MG1-10. | Robert Brown    |
| OR/MG1-11. | George Malosh   |
| OR/MG1-12. | Jeff Cravens    |



**CORRECTIVE ACTION INITIATION DATE:**

OR/MG1-1.	March 25, 2002
OR/MG1-2.	March 25, 2002
OR/MG1-3.	March 25, 2002
OR/MG1-4.	March 25, 2002
OR/MG1-5.	March 25, 2002
OR/MG1-6.	March 25, 2002
OR/MG1-7.	March 25, 2002
OR/MG1-8.	April 15, 2002
OR/MG1-9.	April 15, 2002
OR/MG1-10.	April 15, 2002
OR/MG1-11.	April 15, 2002
OR/MG1-12.	September 15, 2002

**EXPECTED COMPLETION DATE:**

OR/MG1-1.	April 2, 2002
OR/MG1-2.	April 30, 2002
OR/MG1-3.	May 15, 2002
OR/MG1-4.	May 30, 2002
OR/MG1-5.	May 30, 2002
OR/MG1-6.	May 30, 2002
OR/MG1-7.	May 30, 2002
OR/MG1-8.	July 1, 2002
OR/MG1-9.	July 1, 2002
OR/MG1-10.	July 1, 2002
OR/MG1-11.	July 1, 2002
OR/MG1-12.	October 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG1-1.	Root cause analysis report and CAP
OR/MG1-2.	Written process for SB approval under M-2 signature
OR/MG1-3.	Memo under M-2 signature
OR/MG1-4.	Approved organization-specific procedure or equivalent
OR/MG1-5.	Approved organization-specific procedure or equivalent
OR/MG1-6.	Approved organization-specific procedure or equivalent
OR/MG1-7.	Approved organization-specific procedure or equivalent
OR/MG1-8.	Written declaration of implementation under Assistant manager (AM) signature
OR/MG1-9.	Written declaration of implementation under AM signature
OR/MG1-10.	Written declaration of implementation under AM signature
OR/MG1-11.	Written declaration of implementation under AM signature
OR/MG1-12.	Report of verification activities indicating positive implementation and adequacy of necessary management systems and processes

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

OR/MG2-1 through OR/MG2-9

**Issue MG2: The AMESH role of SB review and independent technical evaluation of SB documents is not being performed effectively. Contributing factors include a lack of available, qualified SB experts, an ORO process that permits the AMESH to exercise SB roles only when requested by line organizations, and a breakdown in communication between the AMESH and AMEM.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG2-1.	Interim: Use details and support service contractors to augment staff while defining ORO SB process and evaluating work load based on process.
OR/MG2-2.	Reevaluate staffing analysis based on current organizational expectations for AMEM.
OR/MG2-3.	Reevaluate staffing analysis based on current organizational expectations for AMESH.
OR/MG2-4.	Reevaluate staffing analysis based on current organizational expectations for AML.
OR/MG2-5.	Reevaluate staffing analysis based on current organizational expectations for AMAU.
OR/MG2-6.	Make sufficient qualified staffing available and develop contingency plan if minimum staffing is not available.
OR/MG2-7.	Evaluate effectiveness of implemented process to identify overlaps, gaps, and metrics.
OR/MG2-8.	Interim: Issue roles and responsibilities under M-2 signature.
OR/MG2-9.	Long-term: Define roles and responsibilities in an ORO Directive.

**DOE RESPONSIBLE PERSON:**

OR/MG2-1.	Robert Poe
OR/MG2-2.	Gerald Boyd
OR/MG2-3.	Robert Poe
OR/MG2-4.	George Malosh
OR/MG2-5.	Robert Brown
OR/MG2-6.	Michael Holland
OR/MG2-7.	Margaret Morrow
OR/MG2-8.	Margaret Morrow
OR/MG2-9.	Robert Poe

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG2-1.	December 15, 2001
OR/MG2-2.	April 10, 2002
OR/MG2-3.	April 10, 2002
OR/MG2-4.	April 10, 2002
OR/MG2-5.	April 10, 2002
OR/MG2-6.	September 1, 2002
OR/MG2-7.	November 1, 2002
OR/MG2-8.	December 20, 2001
OR/MG2-9.	February 22, 2002

**EXPECTED COMPLETION DATE:**

OR/MG2-1.	April 30, 2002
OR/MG2-2.	May 31, 2002
OR/MG2-3.	May 31, 2002
OR/MG2-4.	May 31, 2002
OR/MG2-5.	May 31, 2002
OR/MG2-6.	November 1, 2002
OR/MG2-7.	November 15, 2002
OR/MG2-8.	December 20, 2001 (complete)
OR/MG2-9.	May 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG2-1.	Detail assignment documentation
OR/MG2-2.	Staffing analysis under signature of AMEM
OR/MG2-3.	Staffing analysis under signature of AMESH
OR/MG2-4.	Staffing analysis under signature of AML
OR/MG2-5.	Staffing analysis under signature of AMAU
OR/MG2-6.	Organization chart indicating positions staffed in accordance with staffing plan
OR/MG2-7.	Report of evaluation activities, findings, and recommendations
OR/MG2-8.	Memo under M-2 signature
OR/MG2-9.	Approved directive

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue MG3: Processes, systems, and procedures used by ORO and BJC to prepare, review, approve, and monitor nuclear facility SBs, as well as to track SB assessment findings and corrective actions, have been conducted very informally, if at all.**

**DESCRIPTION OF CORRECTIVE ACTION:**

Issue program descriptions, procedures, and assessment strategy (see MG-1 and MG-7).

OR/MG3-1.	Issue ORO dispute resolution process.
OR/MG3-2.	Assign resources to issues management system (IMS) development team.
OR/MG3-3.	Define IMS requirements.
OR/MG3-4.	Procure/develop software.
OR/MG3-5.	Document ORO issues management process.
OR/MG3-6.	Train personnel on IMS use.
OR/MG3-7.	Issue ORO IMS process.
OR/MG3-8.	Populate IMS with AMEM data.
OR/MG3-9.	Populate IMS with AMESH data.
OR/MG3-10.	Populate IMS with AMAU data.
OR/MG3-11.	Populate IMS with AML data.

**DOE RESPONSIBLE PERSON:**

OR/MG3-1.	Margaret Morrow
OR/MG3-2.	Margaret Morrow
OR/MG3-3.	Robert Poe
OR/MG3-4.	Robert Poe
OR/MG3-5.	Robert Poe
OR/MG3-6.	Robert Folker
OR/MG3-7.	Michael Holland
OR/MG3-8.	Gerald Boyd
OR/MG3-9.	Robert Poe
OR/MG3-10.	Robert Brown
OR/MG3-11.	George Malosh

**CORRECTIVE ACTION INITIATION DATE:**

See also MG-1 and MG-7.

OR/MG3-1.	April 29, 2002
OR/MG3-2.	February 22, 2002
OR/MG3-3.	April 5, 2002
OR/MG3-4.	May 3, 2002
OR/MG3-5.	May 3, 2002
OR/MG3-6.	July 26, 2002
OR/MG3-7.	September 24, 2002
OR/MG3-8.	October 1, 2002
OR/MG3-9.	October 1, 2002
OR/MG3-10.	October 1, 2002
OR/MG3-11.	October 1, 2002

**EXPECTED COMPLETION DATE:**

See also MG-1 and MG-7.

OR/MG3-1.	May 31, 2002
OR/MG3-2.	April 4, 2002 (complete)
OR/MG3-3.	May 2, 2002
OR/MG3-4.	July 11, 2002
OR/MG3-5.	July 25, 2002
OR/MG3-6.	September 9, 2002
OR/MG3-7.	September 30, 2002
OR/MG3-8.	November 11, 2002
OR/MG3-9.	November 11, 2002
OR/MG3-10.	November 11, 2002
OR/MG3-11.	November 11, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

See also MG-1 and MG-7.

OR/MG3-1.	Approved ORO dispute resolution process
OR/MG3-2.	Task Team charter
OR/MG3-3.	White paper describing ORO IMS requirements
OR/MG3-4.	Memo declaring functional software under Director Assessments and Emergency Management Division (AMED) signature
OR/MG3-5.	Draft ORO IMS process (e.g., user's manual)
OR/MG3-6.	Lesson plan and attendance sheet(s)
OR/MG3-7.	Written ORO IMS process
OR/MG3-8.	Memo under AM signature certifying completion of data entry
OR/MG3-9.	Memo under AM signature certifying completion of data entry
OR/MG3-10.	Memo under AM signature certifying completion of data entry
OR/MG3-11.	Memo under AM signature certifying completion of data entry

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

OR/MG1-2 through OR/MG1-12

**Issue MG4: ORO and BJC managers have not been held accountable for their lack of performance in exercising their nuclear safety roles, responsibilities, and authorities.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG4-1. Manager M-1 issues expectation for manager accountability for SB and incorporate into M-1 and M-2 performance standard.  
OR/MG4-2. Incorporate expectations into AMEM performance standards.  
OR/MG4-3. Incorporate expectations into AMESH performance standards.  
OR/MG4-4. Incorporate expectations into AML performance standards.  
OR/MG4-5. Incorporate expectations into AMAU performance standards.  
OR/MG4-6. Independently assess the effectiveness of the accountability process.

**DOE RESPONSIBLE PERSON:**

OR/MG4-1. Michael Holland  
OR/MG4-2. Gerald Boyd  
OR/MG4-3. Robert Poe  
OR/MG4-4. George Malosh  
OR/MG4-5. Robert Brown  
OR/MG4-6. Michael Holland

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG4-1. February 22, 2002  
OR/MG4-2. February 25, 2002  
OR/MG4-3. February 25, 2002  
OR/MG4-4. February 25, 2002  
OR/MG4-5. February 25, 2002  
OR/MG4-6. March 29, 2002

**EXPECTED COMPLETION DATE:**

OR/MG4-1. April 30, 2002  
OR/MG4-2. March 29, 2002 (complete)  
OR/MG4-3. March 29, 2002 (complete)  
OR/MG4-4. March 29, 2002 (complete)  
OR/MG4-5. March 29, 2002 (complete)  
OR/MG4-6. April 1, 2003

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG4-1. Memo under M-2 signature  
OR/MG4-2. Copies of applicable performance appraisal plans  
OR/MG4-3. Copies of applicable performance appraisal plans  
OR/MG4-4. Copies of applicable performance appraisal plans  
OR/MG4-5. Copies of applicable performance appraisal plans  
OR/MG4-6. Copy of assessment evaluation

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A



**Issue MG5: Several factors have led the team to conclude that there has been an overall lack of management priority given to nuclear safety within both the ORO and BJC organizations.**

**DESCRIPTION OF CORRECTIVE ACTION:**

N/A (This issue is addressed by the corrective actions listed under Issues MG1 and MG4.)

**DOE RESPONSIBLE PERSON:**

N/A

**CORRECTIVE ACTION INITIATION DATE:**

N/A

**EXPECTED COMPLETION DATE:**

N/A

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

N/A

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

CORRECTIVE ACTIONS RELATED TO FINDINGS MG1 & MG4

**Issue MG6: The WSS included in the BJC contract did not fully invoke applicable nuclear safety requirements and standards.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG6-1. Re-evaluate the existing BJC WSS set.  
OR/MG6-2. Modify the BJC WSS set, as appropriate.  
OR/MG6-3. Determine adequacy of ORO WSS development process and implement any necessary upgrades (see MG-4 for linkage to accountability root cause).

**DOE RESPONSIBLE PERSON:**

OR/MG6-1. Gerald Boyd  
OR/MG6-2. Gerald Boyd  
OR/MG6-3. Margaret Morrow

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG6-1. February 22, 2002  
OR/MG6-2. April 8, 2002  
OR/MG6-3. April 10, 2002

**EXPECTED COMPLETION DATE:**

OR/MG6-1. March 29, 2002 (complete)  
OR/MG6-2. December 6, 2002  
OR/MG6-3. May 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG6-1. Report of re-evaluation findings and recommendations under AMEM signature  
OR/MG6-2. Copy of modified WSS set  
OR/MG6-3. Statement of adequacy or recommendations/modifications under M-2 signature

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue MG7: No independent SB assessment role has been practiced. DOE FRs do not formally or routinely communicate nuclear SB issues to ORO management. Therefore, the ORO Manager never had an "honest" safety broker who was capable of identifying that there was an ongoing problem.**

**RECOMMENDATION MG7a**

**DOE FRs should formalize their assessment process related to SB, including documentation of concerns and findings and communication to the ORO Manager. (See related actions MG-1, MG-3, and MG-4)**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG7-1.	Include periodic SB program assessments in an ORO Annual Assessment Plan
OR/MG7-2.	Conduct an assessment of the EM FR program.
OR/MG7-3.	Conduct an assessment of Oak Ridge National Laboratory (ORNL) FR program.
OR/MG7-4.	Provide recommendations for formalization of an ORO FR program.
OR/MG7-5.	Decide on desired changes relative to the ORO FR program.
OR/MG7-6.	Implement desired changes relative to the ORO FR program.

**DOE RESPONSIBLE PERSON:**

OR/MG7-1.	Margaret Morrow
OR/MG7-2.	Robert Poe
OR/MG7-3.	Robert Poe
OR/MG7-4.	Robert Poe
OR/MG7-5.	Margaret Morrow
OR/MG7-6.	Gerald Boyd

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG7-1.	April 15, 2002
OR/MG7-2.	April 8, 2002
OR/MG7-3.	June 10, 2002
OR/MG7-4.	June 17, 2002
OR/MG7-5.	June 18, 2002
OR/MG7-6.	May 1, 2002

**EXPECTED COMPLETION DATE:**

OR/MG7-1.	May 31, 2002
OR/MG7-2.	April 12, 2002
OR/MG7-3.	June 14, 2002
OR/MG7-4.	June 17, 2002
OR/MG7-5.	July 1, 2002
OR/MG7-6.	July 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG7-1.	ORO Annual Assessment Plan
OR/MG7-2.	Assessment report
OR/MG7-3.	Assessment report
OR/MG7-4.	List of recommendations under AMESH signature
OR/MG7-5.	Memorandum of decision under M-2 signature
OR/MG7-6.	Copy of EM FR program description/procedure

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue MG9: Subcontractors who conduct USQDs are not required to follow the BJC-NS-1001 procedure. In fact, four different procedures are being used by subcontractors at the five sites under BJC's jurisdiction. None of these procedures have been reviewed and approved.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG9-1. Review and approve BJC USQD procedure and submit to HQ.  
OR/MG9-2. Verify use and effectiveness of USQD procedure by BJC and subcontractors.

**DOE RESPONSIBLE PERSON:**

OR/MG9-1. Gerald Boyd  
OR/MG9-2. Gerald Boyd

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG9-1. February 22, 2002  
OR/MG9-2. September 1, 2002

**EXPECTED COMPLETION DATE:**

OR/MG9-1. May 1, 2002  
OR/MG9-2. December 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/MG9-1. Copy of locally-approved BJC USQD procedure (one procedure covers all BJC subcontractors)  
OR/MG9-2. Copy of assessment report

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue MG10: Very little SB-related training has been given to ORO and BJC personnel.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/MG10-1.	Conduct training needs analysis to identify personnel in need of SB knowledge (M-1 through organization).
OR/MG10-2.	Incorporate SB competency into TQP Office/Facility Specific Standards.
OR/MG10-3.	Define process for obtaining approval of qualification.
OR/MG10-4.	Review/update applicable position descriptions in AMEM.
OR/MG10-5.	Review/update applicable position descriptions in AML.
OR/MG10-6.	Review/update applicable position descriptions in AMAU.
OR/MG10-7.	Review/update applicable position descriptions in AMESH.

**DOE RESPONSIBLE PERSON:**

OR/MG10-1.	Robert Folker
OR/MG10-2.	Robert Folker
OR/MG10-3.	Robert Poe
OR/MG10-4.	Gerald Boyd
OR/MG10-5.	George Malosh
OR/MG10-6.	Robert Brown
OR/MG10-7.	Robert Poe

**CORRECTIVE ACTION INITIATION DATE:**

OR/MG10-1.	February 22, 2002
OR/MG10-2.	February 22, 2002
OR/MG10-3.	February 22, 2002
OR/MG10-4.	April 10, 2002
OR/MG10-5.	April 10, 2002
OR/MG10-6.	April 10, 2002
OR/MG10-7.	April 10, 2002

**EXPECTED COMPLETION DATE:**

OR/MG10-1.	April 10, 2002
OR/MG10-2.	April 30, 2002
OR/MG10-3.	May 31, 2002
OR/MG10-4.	May 10, 2002
OR/MG10-5.	May 10, 2002
OR/MG10-6.	May 10, 2002
OR/MG10-7.	May 10, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- OR/MG10-1. Training needs analysis report
- OR/MG10-2. Copies of approved TQP Standards
- OR/MG10-3. Copy of documented qualification process
- OR/MG10-4. Copies of applicable PDs
- OR/MG10-5. Copies of applicable PDs
- OR/MG10-6. Copies of applicable PDs
- OR/MG10-7. Copies of applicable PDs

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue SB3: Many SAR and BIO documents do not adequately reflect current organizations, activities, missions, and hazards.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/SB3-1. Assess and implement compensatory measures to ensure the safety of current operations.  
OR/SB3-2. Ensure DSAs are updated in accordance with 10 CFR 830 by BJC.

**DOE RESPONSIBLE PERSON:**

OR/SB3-1. Gerald Boyd  
OR/SB3-2. Gerald Boyd

**CORRECTIVE ACTION INITIATION DATE:**

OR/SB3-1. October 1, 2001  
OR/SB3-2. February 22, 2002

**EXPECTED COMPLETION DATE:**

OR/SB3-1. May 31, 2002  
OR/SB3-2. April 1, 2003

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/SB3-1. Assessment report  
OR/SB3-2. Updated DSAs

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A



**Issue SB4: The ORO NCS Program still does not meet the intent of DOE Policy 450.5, *Line Environment, Safety, and Health Oversight*. ORO does not have an approved formal program in place, and the corrective actions for the open safety issues identified in May 2000 relative to this program have not been closed. Most of the BJC SARs and BIOs do not adequately describe the criticality safety program, not do they have the requisite commitments in the TSRs and OSRs.**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/SB4-1.	Establish ORO Criticality Safety Program Description and generic implementing procedure.
OR/SB4-2.	Review and accept BJC generic SMP descriptions.
OR/SB4-3.	Develop strategies for SMP implementation in SB documents.
OR/SB4-4.	Review and comment on BJC DSA implementation guides/manuals.
OR/SB4-5.	Close out open CATS items regarding criticality safety.

**DOE RESPONSIBLE PERSON:**

OR/SB4-1.	Margaret Morrow
OR/SB4-2.	Gerald Boyd
OR/SB4-3.	Gerald Boyd
OR/SB4-4.	Gerald Boyd
OR/SB4-5.	Robert Poe

**CORRECTIVE ACTION INITIATION DATE:**

OR/SB4-1.	February 28, 2001
OR/SB4-2.	April 5, 2002
OR/SB4-3.	April 12, 2002
OR/SB4-4.	April 12, 2002
OR/SB4-5.	February 22, 2002

**EXPECTED COMPLETION DATE:**

OR/SB4-1.	March 28, 2002 (complete)
OR/SB4-2.	June 5, 2002
OR/SB4-3.	July 1, 2002
OR/SB4-4.	July 1, 2002
OR/SB4-5.	November 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/SB4-1.	Approved Criticality Safety Program Description and implementing procedure
OR/SB4-2.	SB Working Group minutes
OR/SB4-3.	SB Working Group minutes
OR/SB4-4.	SB Working Group minutes
OR/SB4-5.	CATS printout showing closed actions

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue SB7: FHAs were found to be missing, out of date, or inconsistent with the SB documents (e.g., with respect to the combustible loading limits, maximum potential fires, status of fire suppression systems, etc.).**

**DESCRIPTION OF CORRECTIVE ACTION:**

OR/SB7-1. Ensure incorporation of DOE O 420.1 in BJC WSS, as appropriate.  
OR/SB7-2. Ensure FHAs are conducted at BJC facilities and integrated into BJC SB documents, as appropriate.  
OR/SB7-3. Verify that FHAs are appropriately incorporated into SBs for UT Battelle and BNFL.

**DOE RESPONSIBLE PERSON:**

OR/SB7-1. Gerald Boyd  
OR/SB7-2. Gerald Boyd  
OR/SB7-3. Margaret Morrow

**CORRECTIVE ACTION INITIATION DATE:**

OR/SB7-1. February 22, 2002  
OR/SB7-2. April 12, 2002  
OR/SB7-3. June 1, 2002

**EXPECTED COMPLETION DATE:**

OR/SB7-1. March 29, 2002 (complete)  
OR/SB7-2. April 1, 2003  
OR/SB7-3. August 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

OR/SB7-1. WSS set, Section 4.2  
OR/SB7-2. Approved BJC procedure  
OR/SB7-3. Verification report

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue ORRC1: The ORO root cause analysis focused on the SB issue, AMEM, and AMESH. However, the root causes identified have clear implications for other activities and organizations within ORO.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC1-1. Conduct additional analysis of selected ORO processes to identify any changes in business practices necessary to prevent problems similar to those observed in ORO SB activities.

**DOE RESPONSIBLE PERSON:**

ORRC1-1. Margaret Morrow

**CORRECTIVE ACTION INITIATION DATE:**

ORRC1-1. April 29, 2002

**EXPECTED COMPLETION DATE:**

ORRC1-1. July 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC1-1. List of ORO processes analyzed and report of analysis

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue ORRC2: ORO has not codified a root cause analysis process to use when significant problems or deficiencies are identified.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC2-1. Institute an ORO root cause analysis process that is automatically invoked when a problem or deficiency of appropriate significance is identified.

**DOE RESPONSIBLE PERSON:**

ORRC2-1. Margaret Morrow

**CORRECTIVE ACTION INITIATION DATE:**

ORRC2-1. April 29, 2002

**EXPECTED COMPLETION DATE:**

ORRC2-1. July 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC2-1. Documented and approved ORO root cause analysis process

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue ORRC3: No performance standards were established to define successful implementation of ISMS.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC3-1. Develop and issue performance standards for ISMS implementation and verification.

**DOE RESPONSIBLE PERSON:**

ORRC3-1. Margaret Morrow

**CORRECTIVE ACTION INITIATION DATE:**

ORRC3-1. March 1, 2002

**EXPECTED COMPLETION DATE:**

ORRC3-1. September 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC3-1. Documented and approved ORO ISMS verification process

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue ORRC4: It is unclear who is responsible for the ORO ISMS.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC4-1. Charter an ORO ISMS Advisory Committee to assist the Operations Office Manager in maintaining the ORO ISMS.

**DOE RESPONSIBLE PERSON:**

ORRC4-1. M-1

**CORRECTIVE ACTION INITIATION DATE:**

ORRC4-1. November 1, 2002

**EXPECTED COMPLETION DATE:**

ORRC4-1. November 10, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC4-1. Approved ORO ISMS Advisory Committee charter

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

ORRC4-1. Each line manager develops an appropriate ISM program implementation and procedure

**Issue ORRC5: There is a lack of management priority and accountability for closing findings.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC5-1. Adopt a process for routinely bringing open issues and actions to management attention (see MG-4).

**DOE RESPONSIBLE PERSON:**

ORRC5-1. M-1

**CORRECTIVE ACTION INITIATION DATE:**

ORRC5-1. April 15, 2002

**EXPECTED COMPLETION DATE:**

ORRC5-1. July 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC5-1. Documented process under M-1 signature

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A



**Issue ORRC6: ISMS Certification has been revoked for ORO.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC6-1. Develop an ORO Federal ISMS Program.  
ORRC6-2. Implement ORO Federal ISMS Program.  
ORRC6-3. Conduct a self-assessment of ORO Federal ISMS Program implementation.  
ORRC6-4. Commission an independent verification of ORO Federal ISMS Program implementation.

**DOE RESPONSIBLE PERSON:**

ORRC6-1. Robert Poe  
ORRC6-2. Michael Holland  
ORRC6-3. Robert Poe  
ORRC6-4. Michael Holland

**CORRECTIVE ACTION INITIATION DATE:**

ORRC6-1. February 1, 2002  
ORRC6-2. October 1, 2002  
ORRC6-3. April 1, 2003  
ORRC6-4. May 20, 2003

**EXPECTED COMPLETION DATE:**

ORRC6-1. October 1, 2002  
ORRC6-2. March 1, 2003  
ORRC6-3. April 20, 2003  
ORRC6-4. June 15, 2003

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC6-1. Locally-approved ORO Federal ISMS Program Description  
ORRC6-2. Declaration of implementation by memo under M-1 signature based on evidence of program flowdown to each ORO organization  
ORRC6-3. Assessment report under Assessment Team Leader signature  
ORRC6-4. Verification report under Verification Team Leader signature

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue ORRC7: ISMS Verification has been revoked for BJC.**

**DESCRIPTION OF CORRECTIVE ACTION:**

ORRC7-1. Commission an independent verification of BJC ISMS.

**DOE RESPONSIBLE PERSON:**

ORRC7-1. Michael Holland

**CORRECTIVE ACTION INITIATION DATE:**

ORRC7-1. November 1, 2002

**EXPECTED COMPLETION DATE:**

ORRC7-1. November 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

ORRC7-1. Report under Verification Team Leader signature

**DOE-HQ SUPPORT ACTION REQUIRED? (specify)**

ORRC7-1. Support ISMS verification effort

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**APPENDIX B**

**Bechtel Jacobs Company LLC  
Corrective Actions In Response  
to the  
Independent Safety Basis Assessment  
of  
Bechtel Jacobs Company LLC  
and  
U.S. Department of Energy  
Oak Ridge Operations Office**

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents)

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR FIRE PROTECTION:**

***SAFETY MANAGEMENT PROGRAM – FIRE PROTECTION***

- Establish a site-wide combustible/ignition control program (e.g., elimination of waste storage on wooden pallets, hot work control permits, etc.)
- Perform a FP engineer or equivalent assessment of allowable combustible loading and combustible/ignition control verification on a prioritized basis for each facility as agreed to by ORO
- Commit to formal evaluation of FP, including the fire suppression and detection systems at BJC's facilities (and to include updating FHAs for all nuclear facilities)

**DESCRIPTION OF CORRECTIVE ACTION:**

- |              |  |
|--------------|--|
| BJC/SA1a-1.  | Conduct Assessments of FP&EM SMP implementation to supplement SB flowdown. Document results. Define Corrective Actions and enter into I/CATS.  |
| BJC/SA1a-2.  | Conduct facility specific FP SME assessments of combustible loading and ignition controls as determined to be needed based on results from FP SMP Assessments.   |
| BJC/SA1a-3.  | Modify the M&I contract to incorporate DOE Order 420.1, Section 4.2, FP, into BJC contract WSS.  |
| BJC/SA1a-4.  | Issue a BJC Policy to describe management commitment to the FP SMP.  |
| BJC/SA1a-5.  | Revise BJC-FP-2001 FP Program Description to incorporate functional direction for combustible loading limitations and controls for ignition sources as well as integration of FHAs into DSAs, pre-fire planning, emergency response training and drills.   |
| BJC/SA1a-6.  | Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards. (These DSA guides will include an integrated hazards analysis process, and separate guides for Fire Hazards Assessments and EM Hazard Assessments) |
| BJC/SA1a-7.  | Develop a company-wide procedure for conducting FPEA.  |
| BJC/SA1a-8.  | Evaluate the adequacy of FP requirements in BJC subcontract pro forma and revise pro forma as needed.  |
| BJC/SA1a-9.  | Obtain necessary resources to support FP SME to evaluate and disposition results from SMP assessments regarding combustible loading and ignition controls.   |
| BJC/SA1a-10. | Develop a GM level Charter for Security, Fire, EM Functional Organization describing Roles and Responsibilities.   |
| BJC/SA1a-11. | Reassess the SF&EM Organization and identify FY 2003 budget authority to staff organization for deploying FP program functional personnel to projects.   |

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-1.	Bruce Wilson
BJC/SA1a-2.	Bo Harris
BJC/SA1a-3.	Keith Bradley
BJC/SA1a-4.	Bo Harris
BJC/SA1a-5.	Bo Harris
BJC/SA1a-6.	Bruce Wilson
BJC/SA1a-7.	Bo Harris
BJC/SA1a-8.	Bo Harris
BJC/SA1a-9.	Bo Harris
BJC/SA1a-10.	Brenda Tilley
BJC/SA1a-11.	Brenda Tilley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1a-1.	March 14, 2002
BJC/SA1a-2.	May 6, 2002
BJC/SA1a-3.	February 28, 2002
BJC/SA1a-4.	April 30, 2002
BJC/SA1a-5.	April 30, 2002
BJC/SA1a-6.	February 1, 2002
BJC/SA1a-7.	April 30, 2002
BJC/SA1a-8.	April 30, 2002
BJC/SA1a-9.	March 21, 2002
BJC/SA1a-10.	March 14, 2002
BJC/SA1a-11.	April 5, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1a-1.	April 30, 2002
BJC/SA1a-2.	August 30, 2002
BJC/SA1a-3.	February 28, 2002 (complete)
BJC/SA1a-4.	June 30, 2002
BJC/SA1a-5.	September 30, 2002
BJC/SA1a-6.	May 31, 2002
BJC/SA1a-7.	September 30, 2002
BJC/SA1a-8.	September 30, 2002
BJC/SA1a-9.	April 30, 2002
BJC/SA1a-10.	June 30, 2002
BJC/SA1a-11.	June 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- BJC/SA1a-1. Copy of FP&EM SMP Assessments Summary Report
- BJC/SA1a-2. Completed FP checklists for those facilities determined to need SME assessments from SMP Assessment Summary Report
- BJC/SA1a-3. Letter from BJC GM to DOE COR putting DOE Order 420.1, Section 4.2 on the BJC contract
- BJC/SA1a-4. An approved FP Program Description published on the BJC Performance Document System web site
- BJC/SA1a-5. A revised FP Description published on the BJC Performance Document System web site
- BJC/SA1a-6. SB flow charts and copies of DSA Guides
- BJC/SA1a-7. An approved procedure for conducting FP Engineering Assessments published on the BJC Performance Document System web site
- BJC/SA1a-8. Revised *pro forma* containing updated FP requirements
- BJC/SA1a-9. A fully executed Work Release for subcontracted FP support
- BJC/SA1a-10. An approved Charter for Security, Fire, and EM published on the BJC Performance Document web site
- BJC/SA1a-11. A proposal for reorganizing SF&EM and a budget request to implement deployment of adequate support to BJC Projects in FY 2003

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

- BJC/SA1a-1. I/CATS A4365

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

**Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents)**

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR INVENTORY CONTROL**

***SAFETY MANAGEMENT PROGRAM – INVENTORY CONTROL***

Establish a formal inventory and waste (or material) acceptance control program which ensures that all facilities and activities remain within the bounds of the SB documentation and hazard categorization.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SA1a-12.            Develop new BJC hazard identification, facility categorization, and inventory control procedure/document, compliant with governing standards.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-12.            Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1a-12.            January 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1a-12.            July 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1a-12.            Copy of hazard identification, facility categorization, and inventory control procedure/document

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SA1a-12.            DOE-ORO will provide input during procedure/document development via the SB Working Group sessions

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

**Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents.)**

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR PROCEDURES AND TRAINING**

***SAFETY MANAGEMENT PROGRAM – PROCEDURES AND TRAINING***

- Update operating procedures following BJC's verification of the flowdown of controls.
- Train personnel on the new/revised procedures.
- Verify qualifications and training of BJC, its subcontractors, and ORO personnel responsible for preparation, review, and oversight of SB documentation.

**DESCRIPTION OF CORRECTIVE ACTION:**

Discussion: Corrective actions for findings and observations from the SB flowdown assessment are being tracked to closure in the BJC I/CATS. These actions include those to update operating procedures (where needed) for flowdown of SB controls. Project personnel will be trained on revised procedures that implement SB controls. This action is covered in the fourteen-step training and qualification improvement plan. Refer to Section 5.3.

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	This action is covered by the corporate training and qualification improvement plan.
BJC/SA1a-15a)	Identify critical positions supporting BJC nuclear facilities
BJC/SA1a-15b)	Develop qualification requirements based on the identified roles and responsibilities for nuclear facility critical positions
BJC/SA1a-15c)	Upgrade Training Position Descriptions with the roles and responsibilities for BJC nuclear facility critical positions
BJC/SA1a-15d)	Complete required training and qualification documentation for nuclear facility critical position

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	Greg Vaughn

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	January 7, 2002



**EXPECTED COMPLETION DATE:**

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	
BJC/SA1a-15a)	March 18, 2002 (complete)
BJC/SA1a-15b)	April 15, 2002
BJC/SA1a-15c)	April 25, 2002
BJC/SA1a-15d)	June 26, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	
BJC/SA1a-15a)	Copy of list of critical positions
BJC/SA1a-15b)	Copy of qualification requirements for critical positions
BJC/SA1a-15c)	Copy of Training Positions Descriptions for critical positions
BJC/SA1a-15d)	Copy of training and qualification documentation

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1a-13.	N/A
BJC/SA1a-14.	N/A
BJC/SA1a-15.	
BJC/SA1a-15a)	I/CATS A4785
BJC/SA1a-15b)	I/CATS A4786
BJC/SA1a-15c)	I/CATS A4787
BJC/SA1a-15d)	I/CATS A4788

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents.)

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR CRITICALITY SAFETY**

***SAFETY MANAGEMENT PROGRAM – CRITICALITY SAFETY***

- Complete the corrective action items in response to the HQs criticality safety assessment
- Review and approval of the ETTP site-wide R/CAAS TSR is required

**DESCRIPTION OF CORRECTIVE ACTION:**

- BJC/SA1a-16. Thirty-seven of 40 corrective actions have been completed. The remaining actions are being tracked in I/CATS and are tied to implementation of the Facility Authorization Tool-Container Analysis Tool (FATCAT) database. BJC has a NCS implementation plan and is on track to complete all actions by the close of FY 2002.
- BJC/SA1a-17. Completed February 12, 2002. DOE Safety Evaluation Report (SER) issued with "no conditions of approval".

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/SA1a-16. Bill Lee  
BJC/SA1a-17. M'balia Tagoe

**CORRECTIVE ACTION INITIATION DATE:**

- BJC/SA1a-16. September 1, 2000  
BJC/SA1a-17. November 12, 2001

**EXPECTED COMPLETION DATE:**

- BJC/SA1a-16. September 30, 2002  
BJC/SA1a-17. February 12, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- BJC/SA1a-16. Letter report summarizing completion of the NCS CAP  
BJC/SA1a-17. Copy of ETTP R/CAAS SER

**DOE SUPPORT ACTION REQUIRED? (specify)**

- BJC/SA1a-16. DOE-ORO is in the process of preparing their NCS CAP and forwarding the DOE-ORO and BJC CAPs to DOE-HQ for approval  
BJC/SA1a-17. DOE review and approval of ETTP R/CAAS (complete)

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1a-16.

I/CATS A3575

BJC/SA1a-17.

The implementation plan for the new TSR is I/CATS Source 8436

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted.)**

**RECOMMENDATION BJC/SA1a**

**Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents.)**

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR MAINTENANCE AND IN-SERVICE INSPECTION**

***SAFETY MANAGEMENT PROGRAM – MAINTENANCE AND IN-SERVICE INSPECTION***

- Formally incorporate a surveillance and in-service inspection program for all safety significant Systems, Structures and Components (SSCs) identified in the SB documents (as amended through the flowdown verification)

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SA1a-18. Surveillance and inspection programs for SSCs are facility specific and are in place for the following BJC facilities: Portsmouth Criticality Accident Alarm System (CAAS), Paducah CAAS, ETTP R/CAAS, and Molten Salt Reactor Experiment (MSRE) compressed gas system relief valves. The Portsmouth and Paducah CAASs are maintained and inspected by United States Enrichment Corporation (USEC). The ETTP RCAAS maintenance activities are coordinated by the ETTP Park Shift Superintendent's office and tracked via BJC's safety analysis subcontractor. MSRE compressed gas system relief valves are bench tested by UT Battelle. Recent SB flowdown assessments checked current status of the surveillance and inspection programs and found no deficiencies. As part of the BJC ISMS, implementation of surveillance and inspections will continue to be performed in accordance with SB requirements. Maintenance and in-service inspection program requirements will be addressed in upgraded SB documents to comply with 10 CFR 830 Subpart B (reference I/CATS Action 4371). No further action is required.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-18. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

N/A

**EXPECTED COMPLETION DATE:**

N/A

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

N/A

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1a-18. I/CATS A4371

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

**Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents.)**

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR EMERGENCY RESPONSE**

***SAFETY MANAGEMENT PROGRAM – EMERGENCY RESPONSE***

- Establish an effective emergency response program to ensure that personnel are trained and qualified to respond to essential alarm conditions (i.e. fire, criticality, and radioactive release).

**DESCRIPTION OF CORRECTIVE ACTION:**

- |              |   |
|--------------|---|
| BJC/SA1a-19. | Conduct Assessments of FP&EM SMP implementation to supplement SB flowdown. Document Results. Define Corrective Actions and enter into I/CATS.   |
| BJC/SA1a-20. | Conduct emergency management SME assessments as determined to be needed based on results from EM SMP Assessments.   |
| BJC/SA1a-21. | Revise the BJC Emergency Management Program Description to include (1) the requirement for BJC Projects to see that occupants of facilities receive training on emergency alarm recognition, evacuation routes, and location of assembly stations, (2) the requirement that an annual building evacuation be conducted, and (3) integration of EMHAs with DSAs into emergency response training and drills. |
| BJC/SA1a-22. | Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards. (These DSA guides will include an integrated hazards analysis process, and separate guides for Fire Hazards Assessments and EM Hazard Assessments.)                         |
| BJC/SA1a-23. | Obtain necessary resources to support EM SME evaluate and disposition results from EM SMP Assessments.  |
| BJC/SA1a-24. | Develop a GM level Charter for Security, Fire and EM Functional Organization describing Roles and Responsibilities (Duplicate #10).   |
| BJC/SA1a-25. | Reassess the SF&EM Organization and identify FY 2003 budget authority to staff organization for deploying emergency management functional personnel to projects (Duplicate BJC/SA1a-11).  |

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-19.	Bruce Wilson
BJC/SA1a-20.	Tony Hart
BJC/SA1a-21.	Tony Hart
BJC/SA1a-22.	Bruce Wilson
BJC/SA1a-23.	Tony Hart
BJC/SA1a-24.	Brenda Tilley
BJC/SA1a-25.	Brenda Tilley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1a-19.	March 14, 2002
BJC/SA1a-20.	May 6, 2002
BJC/SA1a-21.	March 14, 2002
BJC/SA1a-22.	February 1, 2002
BJC/SA1a-23.	March 14, 2002
BJC/SA1a-24.	March 14, 2002
BJC/SA1a-25.	April 5, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1a-19.	April 30, 2002
BJC/SA1a-20.	August 30, 2002
BJC/SA1a-21.	June 30, 2002
BJC/SA1a-22.	May 31, 2002
BJC/SA1a-23.	April 30, 2002
BJC/SA1a-24.	June 30, 2002
BJC/SA1a-25.	June 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1a-19.	Copy of FP&EM SMP Assessments Summary Report
BJC/SA1a-20.	Completed EM checklists for those facilities determined to need SME assessments from SMP Assessment Summary Report
BJC/SA1a-21.	An approved EM Program Description published on the BJC Performance Document web site
BJC/SA1a-22.	SB flow charts and copies of DSA Guides
BJC/SA1a-23.	A fully executed Work Release for subcontracted EM support
BJC/SA1a-24.	An approved Charter for Security, Fire, and EM published on the BJC Performance Document web site
BJC/SA1a-25.	A proposal for reorganizing SF&EM and a budget request to implement deployment of adequate support to BJC Projects in FY 2003

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1a-22.	I/CATS A4365
--------------	--------------

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1a**

Impose compensatory measures on the SMPs as provided in Table 4, with higher priority placed on FP and inventory control. (Note: Other SMPs are expected to be in place; however, the SMPs identified above are considered essential to ensure safe operations to prevent or mitigate significant radiological or toxicological accidents)

**COMPENSATORY MEASURES LISTED IN TABLE 4 FOR HAZARDOUS MATERIAL PROTECTION**

***SAFETY MANAGEMENT PROGRAM – HAZARDOUS MATERIAL PROTECTION***

- Develop procedures, training, and an institutional program to deal with activities or operations that meet the following:
  - Hazardous materials in quantities greater than 40 CFR 302 Threshold Quantities (TQs)
  - Reactive or explosive materials with hazard level  $\geq 2$  as defined by NFPA 45.B-2.3 or 49 CFR 173.2, Division 1.1, 1.2, 1.3, or explosives  $>45g$  of Division 1.4 explosives in one area

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SA1a-26.            Develop a SMP description for Hazardous Material Protection (see also SA1b).

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1a-26.            Roger Thompson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1a-26.            February 11, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1a-26.            April 16, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1a-26.            Copy of Hazardous Materials Protection SMP description

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1a-26.            See SA1b



**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1b**

Besides the SMPs identified in Table 4, the implementation of an effective operational safety program that includes:

- A. Industrial safety and hygiene and
- B. Conduct of operations needs to be maintained
- C. Review the adequacy and effectiveness of procedures and training on handling and storage of hazardous materials, such as pressure vessels, activities with large quantities of hazardous materials and asphyxiants, and those high-hazard activities that could cause worker fatalities (e.g., UF<sub>6</sub> cylinder handling –see the facility write-up in Appendix E)

**INDUSTRIAL SAFETY AND HYGIENE**

**DESCRIPTION OF CORRECTIVE ACTION:**

- A.  
BJC/SA1bA-27. Include in ES&H management assessment process provision for conduct of periodic scheduled management assessments of the industrial safety and Industrial Hygiene (IH) programs.
- BJC/SA1bA-28. N/A
- BJC/SA1bA-29. N/A
- B. See BJC/SA1bB-32 through 53 for Conduct of Operations corrective actions.
- C.  
BJC/SA1bC-30. Conduct assessment of chemical vulnerabilities in conjunctions with the BJC Chemical SMP initiative. This initiative includes following: BJC facilities that have or maintain hazardous materials in quantities greater than the threshold quantities identified in 40 CFR 302 and of facilities with hazard level  $\geq 2$  as defined by NFPA 45.B-2.3 or 49 CFR 173.2, Division 1.1, 1.2, 1.3 or explosives > 45 g of Division 1.4 explosives in one area
- BJC/SA1bC-31. Submit for DOE approval a prioritized chemical vulnerability list.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/SA1bA-27. Garry Suenkel – Industrial Safety; Roger Thompson – IH
- BJC/SA1bC-30, 31. Charles Satterwhite

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1bA-27.        October 1, 2001  
BJC/SA1bC-30.        April 17, 2002  
BJC/SA1bC-31.        April 17, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1bA-27.        March 12, 2002 (complete)  
BJC/SA1bC-30.        January 31, 2002 (complete)  
BJC/SA1bC-31.        April 2, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1bA-27.        Copy of assessment schedule  
BJC/SA1bC-30.        Copy of assessment report  
BJC/SA1bC-31.        Prioritized list of Chemical Vulnerabilities submitted to DOE

**DOE SUPPORT ACTION REQUIRED? (specify)**

Review and approval of chemical vulnerability list

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1b**

**Besides the SMPs identified in Table 4, the implementation of an effective operational safety program that includes:**

- A. Industrial safety and hygiene and
- B. Conduct of operations needs to be maintained
- C. Review the adequacy and effectiveness of procedures and training on handling and storage of hazardous materials, such as pressure vessels, activities with large quantities of hazardous materials and asphyxiants, and those high-hazard activities that could cause worker fatalities (e.g., UF<sub>6</sub> cylinder handling –see the facility write-up in Appendix E)

**SA1b ITEM B CONDUCT OF OPERATIONS NEEDS TO BE MAINTAINED**

**DESCRIPTION OF CORRECTIVE ACTION:**

- |               |  |
|---------------|--|
| BJC/SA1bB-32. | Complete a Conduct of Operations SME Qualifications package. The package provides documentation that the SME possesses unique experience and expert knowledge in selected technical, functional, and/or process areas.   |
| BJC/SA1bB-33. | Communicate upcoming "Conduct of Operations" initiative to MOPs and FMs.   |
| BJC/SA1bB-34. | Perform a crosswalk matrix between DOE Order 5480.19 and applicable BJC procedures, policies and pro-forma documents.  |
| BJC/SA1bB-35. | Develop a Conduct of Operations Program Description Document. The Conduct of Operations Description document will address BJC Standards and expectations, Line management involvement in field activities and the BJC approach for achieving appropriate Rigor in all aspects of worked performed at BJC locations.  |
| BJC/SA1bB-36. | Collect, review and provide feedback on Completed Applicability Matrices submitted by subcontractors to date. Communicate weaknesses and needed changes to affected MOPS and Deputies.   |
| BJC/SA1bB-37. | Develop Conduct of Operations Awareness and orientation materials. Conduct of Operations Awareness session material will include the BJC and DOE expectations for Conduct of Operations and a review of the 18 Conduct of Operations elements. The review will help work groups interpret the intent of each specific Conduct of Operations element and provide assistance on the application of these elements. Key BJC and Subcontractor employees will attend awareness sessions. |
| BJC/SA1bB-38. | Develop a schedule for delivering Conduct of Operations Awareness sessions to Key BJC and subcontractor personnel at all BJC locations. Schedule will specify names (or positions) of attendees and the date, time and location of each session.   |
| BJC/SA1bB-39. | Deliver "Conduct of Operations" Awareness Sessions to key BJC and subcontractor employees identified on schedule developed in BJC/SA1bB-35.  |
| BJC/SA1bB-40. | Review and revise as necessary BJC procedure BJC-PQ-1710 "Discipline and Rigor In Operating Facilities" to ensure compliance with DOE Order 5480.19 "Conduct of Operations Requirements for DOE Facilities".   |
| BJC/SA1bB-41. | Review and Revise BJC subcontract Pro-Forma documents as necessary to flowdown applicable Conduct of Operations Requirements to subcontractors.  |

- BJC/SA1bB-42. Lead and Assist BJC projects and subcontractors during the Conduct of Operations Applicability Matrix Review and development of Conduct of Operations Improvement Plans. This specialized assistance will assure that a graded approach is used in the application of Conduct of Operations Principles to assure that the depth of detail required and extent of dollars expended are commensurate with the project's programmatic importance and potential ES&H impact.
- BJC/SA1bB-43. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-44. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-45. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-46. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-47. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-48. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-49. Review and approve each completed Conduct of Operations Applicability Matrix for subcontractors and self-performed projects within the MOP area of responsibility.
- BJC/SA1bB-50. Assess Conduct of Operations effectiveness. A Performance-based evaluation of ongoing activities will be conducted to determine if appropriate levels of rigor are being successfully applied to BJC Work activities.
- BJC/SA1bB-51. Determine a method for tracking Applicability Matrix actions to closure.
- BJC/SA1bB-52. Develop a process and Track "Conduct of Operations" performance measures.
- BJC/SA1bB-53. Conduct an integrated Conduct of Operations/ISM assessment.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/SA1bB-32. Dennis Stevenson
- BJC/SA1bB-33. George Gregory
- BJC/SA1bB-34. George Gregory
- BJC/SA1bB-35. George Gregory
- BJC/SA1bB-36. George Gregory
- BJC/SA1bB-37. George Gregory
- BJC/SA1bB-38. George Gregory
- BJC/SA1bB-39. George Gregory
- BJC/SA1bB-40. George Gregory
- BJC/SA1bB-41. Bob Lynch
- BJC/SA1bB-42. George Gregory
- BJC/SA1bB-43. M'balia Tagoe
- BJC/SA1bB-44. Greg Eidam
- BJC/SA1bB-45. Ed Trujillo

BJC/SA1bB-46.	Charlie Frye
BJC/SA1bB-47.	R.D. George
BJC/SA1bB-48.	Gilbert Drexel
BJC/SA1bB-49.	Gordon Dover
BJC/SA1bB-50.	George Gregory
BJC/SA1bB-51.	Cindy Daugherty
BJC/SA1bB-52.	George Gregory
BJC/SA1bB-53.	George Gregory

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1bB-32.	March 10, 2002
BJC/SA1bB-33.	April 1, 2002
BJC/SA1bB-34.	March 25, 2002
BJC/SA1bB-35.	April 1, 2002
BJC/SA1bB-36.	April 1, 2002
BJC/SA1bB-37.	March 25, 2002
BJC/SA1bB-38.	March 25, 2002
BJC/SA1bB-39.	May 1, 2002
BJC/SA1bB-40.	May 15, 2002
BJC/SA1bB-41.	May 15, 2002
BJC/SA1bB-42.	May 20, 2002
BJC/SA1bB-43.	May 20, 2002
BJC/SA1bB-44.	May 20, 2002
BJC/SA1bB-45.	May 20, 2002
BJC/SA1bB-46.	May 20, 2002
BJC/SA1bB-47.	May 20, 2002
BJC/SA1bB-48.	May 20, 2002
BJC/SA1bB-49.	May 20, 2002
BJC/SA1bB-50.	July 15, 2002
BJC/SA1bB-51.	May 20, 2002
BJC/SA1bB-52.	July 15, 2002
BJC/SA1bB-53.	October 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA1bB-32.	March 21, 2002 (complete)
BJC/SA1bB-33.	April 1, 2002
BJC/SA1bB-34.	April 30, 2002
BJC/SA1bB-35.	April 30, 2002
BJC/SA1bB-36.	April 30, 2002
BJC/SA1bB-37.	April 30, 2002
BJC/SA1bB-38.	April 30, 2002
BJC/SA1bB-39.	May 15, 2002
BJC/SA1bB-40.	June 15, 2002
BJC/SA1bB-41.	June 15, 2002
BJC/SA1bB-42.	July 20, 2002
BJC/SA1bB-43.	July 31, 2002
BJC/SA1bB-44.	July 31, 2002
BJC/SA1bB-45.	July 31, 2002
BJC/SA1bB-46.	July 31, 2002

BJC/SA1bB-47.	July 31, 2002
BJC/SA1bB-48.	July 31, 2002
BJC/SA1bB-49.	July 31, 2002
BJC/SA1bB-50.	August 15, 2002
BJC/SA1bB-51.	June 1, 2002
BJC/SA1bB-52.	July 20, 2002
BJC/SA1bB-53.	November 8, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1bB-32.	Approved SME Qualification Package for the Conduct of Operations SME
BJC/SA1bB-33.	Record of Attendance
BJC/SA1bB-34.	Completed and approved crosswalk
BJC/SA1bB-35.	Approved BJC Conduct of Operations Program Description document
BJC/SA1bB-36.	Spreadsheet that documents the number of matrices submitted and reviewed with the date weaknesses are communicated to responsible BJC manager
BJC/SA1bB-37.	BJC Conduct of Operations Awareness and Orientation material Package
BJC/SA1bB-38.	Detail schedule including participant names, time, date and location of each session
BJC/SA1bB-39.	Awareness Session attendance sheets
BJC/SA1bB-40.	Revised and updated BJC Procedure BJC-PQ-1710 "Discipline and Rigor in Operating Facilities"
BJC/SA1bB-41.	Revised and approved subcontract pro-forma Exhibits if changes are deemed necessary
BJC/SA1bB-42.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-43.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-44.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-45.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-46.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-47.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-48.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-49.	Approved Conduct of Operations Applicability Matrices and Conduct of Operations Improvement Plans from selected BJC projects and subcontractors
BJC/SA1bB-50.	Conduct of Operations Assessment Report
BJC/SA1bB-51.	P/QA Approved closure process
BJC/SA1bB-52.	Set of Conduct of Operations Performance measures and tracking process approved by P/QA and Appropriate BJC Management
BJC/SA1bB-53.	Approved evaluation report

**DOE SUPPORT ACTION REQUIRED? (specify)**

- BJC/SA1bB-35. Requires DOE Review/Approval
- BJC/SA1bB-42. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement Plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-43. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement Plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-44. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-45. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-46. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-47. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-48. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.
- BJC/SA1bB-49. DOE Review and Approval may be required. DOE may opt to approve the BJC Conduct of Operations implementation process in lieu of reviewing and approving individual subcontractor Applicability Matrices and Improvement plans. In this case, the DOE approval submitted for BJC/SA1bB-34 will suffice.

**LINK TO OTHER CORRECTIVE ACTION?**

N/A



**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1c**

The SB flowdown assessment should incorporate/expand the criteria on the adequacy of controls and implementation of SMPs.)

**DESCRIPTION OF CORRECTIVE ACTION:**

- BJC/SA1c-54. Conduct SB technical adequacy assessment to supplement SB flowdown assessment, document results, define corrective actions, and enter actions in I/CATS.
- BJC/SA1c-55. Conduct assessments of FP&EM SMP implementation to supplement SB flowdown, document results, define corrective actions, and enter into I/CATS.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/SA1c-54. Bruce Wilson  
BJC/SA1c-55. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

- BJC/SA1c-54. February 4, 2002  
BJC/SA1c-55. March 7, 2002

**EXPECTED COMPLETION DATE:**

- BJC/SA1c-54. March 1, 2002 (complete)  
BJC/SA1c-55. April 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- BJC/SA1c-54. Copy of technical adequacy assessment report  
BJC/SA1c-55. Copy of summary report of FP&EM SMP assessments

**DOE SUPPORT ACTION REQUIRED? (specify)**

- BJC/SA1c-54. The technical adequacy assessment was conducted jointly by BJC and DOE-ORO. Team members are listed in the assessment report. No additional support required.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

- BJC/SA1c-54. Similar to I/CATS A4742

**Issue BJC/SA1: Systemic weaknesses in SMPs exist at the BJC corporate level for the five sites (e.g., there is no corporate FP program and therefore, some compensatory measures are warranted).**

**RECOMMENDATION BJC/SA1d**

**BJC's SB confirmation effort should be expedited for all Hazard Category 2 facilities and restricted operations. This needs to include a process to rapidly resolve findings and manage observations or recommendations.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SA1d-56. Conduct reviews of AB 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.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA1d-56. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA1d-56. November 1, 2001

**EXPECTED COMPLETION DATE:**

BJC/SA1d-56. March 21, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA1d-56. Copy of summary SB assessments report, as transmitted to DOE-ORO 2/18/02 and copy of I/CATS Source report(s) demonstrating coverage of the assessment findings and corrective actions by I/CATS

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA1d-56. Similar to I/CATS A4366

**Issue BJC/SA2: The failure to (a) evaluate potential drum explosions that could cause fatalities, serious injuries, or significant chemical exposures and (b) identify their preventive and mitigative controls, some of which may warrant a TSR, is one of the unresolved SER issues regarding the Paducah and Portsmouth Facility Safety Analysis Reports (FSARs), and it is also applicable to many other BJC facilities.**

**RECOMMENDATION BJC/SA2a**

**As an immediate action, the potential gas generation hazard from sealed containers (e.g., from U, fission products, and waste drums) should be evaluated as soon as reasonably possible, and engineering controls (e.g., use of vent clips or HEPA-filtered lids) should be installed where the potential is likely to occur.**

**DESCRIPTION OF CORRECTIVE ACTION:**

- |              |   |
|--------------|---|
| BJC/SA2a-57. | Suspend Waste Disposition Project drum handling opening activities as a result of two over pressurized waste containers.  |
| BJC/SA2a-58. | Modify subcontractor-operating procedures to require: lid-retaining webs to be used for opening any non-vented open top drums. Drums in storage containing TRU waste were evaluated and determined to have HEPA filters installed to prevent over pressurization. |
| BJC/SA2a-59. | Evaluate waste characterization data (Form 2109s) for waste matrices that exhibit gas generation potential. For drums that are found to exhibit gas generation potential, prepare specific AHAs prior to opening.   |
| BJC/SA2a-60. | Implement a safety stand down for all projects to review hazard controls for opening of waste containers.   |
| BJC/SA2a-61. | Add evaluation of waste matrices to hazard screenings in SB documents.  |
| BJC/SA2a-62. | Ensure open-top drum handling and opening requirements are consistent for all subcontractors performing these activities for BJC organizations that may perform these activities. (I/CATS 5030)   |
| BJC/SA2a-63. | Ensure a process is in place to ensure corrective measures are instituted to address bulging/over-pressurized drums identified by any BJC organization or their subcontractor(s). (I/CATS 5031)   |

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- |              |              |
|--------------|--------------|
| BJC/SA2a-57. | Mike West    |
| BJC/SA2a-58. | Mike West    |
| BJC/SA2a-59. | Mike West    |
| BJC/SA2a-60. | Steve Houser |
| BJC/SA2a-61. | Bruce Wilson |
| BJC/SA2a-62. | Ed Najmola   |
| BJC/SA2a-63. | Ed Najmola   |

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA2a-57.	January 3, 2002
BJC/SA2a-58.	February 4, 2002
BJC/SA2a-59.	February 4, 2002
BJC/SA2a-60.	February 1, 2002
BJC/SA2a-61.	February 11, 2002
BJC/SA2a-62.	February 1, 2002
BJC/SA2a-63.	February 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA2a-57.	January 28, 2002 (complete)
BJC/SA2a-58.	February 18, 2002 (complete)
BJC/SA2a-59.	February 18, 2002 (complete)
BJC/SA2a-60.	February 8, 2002 (complete)
BJC/SA2a-61.	May 31, 2002
BJC/SA2a-62.	May 31, 2002
BJC/SA2a-63.	June 14, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA2a-57.	Copy of suspension directive issued by Waste Disposition Procurement Representative to the Subcontractor
BJC/SA2a-58.	Copy of modified subcontractor procedures
BJC/SA2a-59.	Copy of subcontractor procedure
BJC/SA2a-60.	Copy of safety stand down instructions
BJC/SA2a-61.	Copy of hazard analysis DSA guide
BJC/SA2a-62.	Copy of excerpt from Proforma regarding drum handling requirements
BJC/SA2a-63.	Documentation of process to handle bulging/over-pressurized drums

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA2a-62.	I/CATS A5030
BJC/SA2a-63.	I/CATS A5031

**Issue BJC/SA3: Numerous weaknesses were identified in BJC's SB documents, as well as supporting management systems, programs, and procedures. (Note: This is related to various findings throughout Section 5)**

**RECOMMENDATION BJC/SA3a**

It is recommended that a new Price-Anderson Amendments Act NTS report or a revision to the existing one on the UOSV be issued to acknowledge the broader nature of the SB deficiencies, including the USQD problems noted as a result of not having up-to-date SBs. The team recognizes that the root cause analysis performed for the existing NTS report did identify a broad spectrum of causal factors that would apply to many other nuclear facilities. The NTS corrective actions, among other recommendations, must address how BJC is going to perform USQDs in the interim.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SA3a-64.	Perform root cause analysis and determine corrective action(s).
BJC/SA3a-65.	Conduct reviews of AB 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.
BJC/SA3a-66.	Conduct assessments of FP&EM. SMP implementation to supplement SB flowdown document results, define corrective actions, and enter into I/CATS.
BJC/SA3a-67.	Submit updated BJC 10 CFR 830 Implementation Plan to DOE.
BJC/SA3a-68.	Submit update to NTS report to reflect information from SB flowdown assessments and DOE-HQ AB review with expanded corrective actions.
BJC/SA3a-69.	N/A

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SA3a-64.	Betty Dagley
BJC/SA3a-65.	Bruce Wilson
BJC/SA3a-66.	Bruce Wilson
BJC/SA3a-67.	Bruce Wilson
BJC/SA3a-68.	Betty Dagley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SA3a-64.	November 1, 2001
BJC/SA3a-65.	November 2, 2001
BJC/SA3a-66.	March 7, 2002
BJC/SA3a-67.	January 7, 2002
BJC/SA3a-68.	February 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SA3a-64.	November 2, 2001 (complete)
BJC/SA3a-65.	March 21, 2002 (complete) for SB flowdown
BJC/SA3a-66.	April 30, 2002
BJC/SA3a-67.	April 12, 2002
BJC/SA3a-68.	April 12, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SA3a-64.	Copy of NTS root cause analysis
BJC/SA3a-65.	Copies of SB flowdown and technical adequacy assessment reports
BJC/SA3a-66.	Copy of summary report on SMP FP&EM assessments
BJC/SA3a-67.	Copy of 10 CFR 830 DSAs implementation plan
BJC/SA3a-68.	Copy of updated NTS root cause analysis report

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SA3a-64.	I/CATS A4170
BJC/SA3a-65.	I/CATS A4366

**Issue BJC/MG3: Processes, systems, and procedures used by ORO and BJC to prepare, review, approve, and monitor nuclear facility SBs, as well as to track SB assessment findings and corrective actions, have been conducted very informally, if at all.**

**RECOMMENDATION BJC/MG3d**

**BJC should establish corporate expectations on "core" SMPs (e.g., FP, maintenance, training, etc.).**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG3d-70. Develop and issue BJC Nuclear Safety Assurance Policy to clarify expectations and to further define roles and responsibilities.

BJC/MG3d-71. Develop standard SMP descriptions.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG3d-70. Bruce Wilson

BJC/MG3d-71. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG3d-70. January 14, 2002

BJC/MG3d-71. February 21, 2002

**EXPECTED COMPLETION DATE:**

BJC/MG3d-70. April 1, 2002

BJC/MG3d-71. May 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG3d-70. Copy of approved Nuclear Safety Assurance Policy

BJC/MG3d-71. Copies of standard SMP descriptions

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MG3d-71. Concur on final standard SMP descriptions

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue BJC/MG4: ORO and BJC managers have not been held accountable for their lack of performance in exercising their nuclear safety roles, responsibilities, and authorities.**

**RECOMMENDATION BJC/MG4a**

Ensure that mechanisms are in place for holding BJC and ORO managers accountable for meeting their nuclear safety roles and responsibilities. This includes establishment of individual performance goals and evaluations and continued emphasis on nuclear safety within contract mechanisms such as fee evaluations.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG4a-72. Develop and issue BJC Nuclear Safety Assurance Policy to clarify expectations and to further define roles and responsibilities.  
BJC/MG4a-73. Update BJC performance review process for line managers to include evaluation criteria for nuclear safety.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG4a-72. Bruce Wilson  
BJC/MG4a-73. Tom Roosa

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG4a-72. January 14, 2002  
BJC/MG4a-73. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/MG4a-72. April 1, 2002  
BJC/MG4a-73. July 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG4a-72. Copy of approved Nuclear Safety Assurance Policy  
BJC/MG4a-73. Copy of revised performance review documents, including performance criteria for nuclear safety

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A



**Issue BJC/MG4: ORO and BJC managers have not been held accountable for their lack of performance in exercising their nuclear safety roles, responsibilities, and authorities.**

**RECOMMENDATION BJC/MG4b**

Accountability mechanisms should flowdown to subcontractors, including a requirement that subcontractors meet BJC's corporate expectations.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG4b-74. Revise and issue proforma contract Exhibit E to make BJC procedures for Nuclear Safety and NCS mandatory for subcontractors.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG4b-74. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG4b-74. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/MG4b-74. July 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG4b-74. Copy of revised Exhibit E

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MG4b-74. Similar to I/CATS A4739, A4740, A4745, A4746, A4749, A4750

**Issue BJC/MG5: Several factors have led the team to conclude that there has been an overall lack of management priority given to nuclear safety within both the ORO and BJC organizations.**

**RECOMMENDATION BJC/MG5c**

**BJC should ensure that all SB documents for the five sites (ETTP, ORNL, Y-12, Paducah, and Portsmouth) are collected and placed under centralized document control.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG5c-75.	Develop and issue BJC Nuclear Safety Assurance Policy to clarify expectations and to further define roles and responsibilities.
BJC/MG5c-76.	Assign the Nuclear Facility Safety Functional Manager to report to the Deputy General Manager.
BJC/MG5c-77.	Establish a joint BJC-DOE-ORO SB Working Group.
BJC/MG5c-78.	Submit updated BJC 10 CFR 830 Implementation Plan to DOE.
BJC/MG5c-79.	Issue and obtain DOE approval of a single SB List identifying all SB documents for Category 2 & 3 Nuclear Facilities for the five sites.
BJC/MG5c-80.	Define and implement additional improvements to the document control and records management system for AB documents.
BJC/MG5c-81.	Verify that Nuclear Facility SB documents and the SB list are in the BJC records management center.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG5c-75.	Bruce Wilson
BJC/MG5c-76.	John Lyons
BJC/MG5c-77.	John Lyons
BJC/MG5c-78.	Jeff West
BJC/MG5c-79.	Mike Taylor
BJC/MG5c-80.	John Jabaley
BJC/MG5c-81.	John Jabaley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG5c-75.	January 14, 2002
BJC/MG5c-76.	October 1, 2001
BJC/MG5c-77.	February 1, 2002
BJC/MG5c-78.	January 7, 2002
BJC/MG5c-79.	November 1, 2002
BJC/MG5c-80.	December 10, 2002
BJC/MG5c-81.	November 2, 2001

**EXPECTED COMPLETION DATE:**

BJC/MG5c-75. April 1, 2002  
BJC/MG5c-76. December 1, 2001 (complete)  
BJC/MG5c-77. February 15, 2002 (complete)  
BJC/MG5c-78. April 10, 2002 (complete)  
BJC/MG5c-79. December 12, 2001 (complete)  
BJC/MG5c-80. March 21, 2002 (complete)  
BJC/MG5c-81. April 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG5c-75. Copy of Nuclear Safety Assurance Policy  
BJC/MG5c-76. Organization memo  
BJC/MG5c-77. Email establishing SB Working Group  
BJC/MG5c-78. Copy of update 10 CFR 830 Implementation Plan as transmitted to DOE-ORO  
BJC/MG5c-79. Copy of DOE-approved list of SB documents for Category 2 & 3 nuclear facilities  
BJC/MG5c-80. Copy of new procedure on management of SB documents  
BJC/MG5c-81. Copy of management assessment report on SB records management

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MG5c-80. Duplicate of I/CATS A4372 and similar to I/CATS A4370

**Issue BJC/MG6: The WSS included in the BJC contract did not fully invoke applicable nuclear safety requirements and standards.**

**RECOMMENDATION BJC/MG6a**

The current ORO effort to re-evaluate the WSS against DOE nuclear safety requirements should be completed, and the WSS set should be modified to ensure that DOE requirements related to Hazard Category 2 and 3 facilities are adopted, as applicable.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG6a-82. Review 109 Orders of Interest to DNFSB against BJC Contract and submit to DOE.  
BJC/MG6a-83. Submit a Type 1 WSS revisions for applicable WSS sets based on the recommendations forwarded via 2 BJC Letters dated 2/28/02 and DOEs letter dated 3/8/02.  
BJC/MG6a-84. Submit a Type 2 WSS revisions for applicable WSS sets based on the recommendations forwarded via 2 BJC Letters dated 2/28/02 and DOEs letter dated 3/8/02.  
BJC/MG6a-85. Perform Management Assessment of the WSS Process and prepare CAP by 6/30/02.  
BJC/MG6a-86. Submit Implementation Plans to DOE.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG6a-82-86 Keith Bradley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG6a-82-86 October 15, 2001

**EXPECTED COMPLETION DATE:**

BJC/MG6a-82. February 28, 2002 (complete)  
BJC/MG6a-83. March 31, 2002 (complete)  
BJC/MG6a-84. April 30, 2002  
BJC/MG6a-85. June 30, 2002  
BJC/MG6a-86. August 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG6a-82. Copy of Orders Analysis (BJC Contract Letters)  
BJC/MG6a-83. Copy of letter of Type 1 submittal(s)  
BJC/MG6a-84. Copy of letter of Type 2 submittal(s)  
BJC/MG6a-85. Copy of Management Assessment Report and CAP  
BJC/MG6a-86. Copy of Implementation Plans submitted

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MG6a-82. Approval of Type 2 WSS changes  
BJC/MG6a-83. Approval of Implementation Plans via COR signature

LINK TO OTHER CORRECTIVE ACTION? (specify)

N/A

Issue BJC/MG8: ORO and BJC have not established minimum nuclear safety competencies for program, project, and FMs.

**RECOMMENDATION BJC/MG8a**

See recommendation MG3a related to ORO. BJC should conduct a staffing analysis and ensure that sufficient numbers of qualified safety personnel are made available for preparation, review, and approval of SB documents. In addition, BJC should ensure that near-term compensatory measures are in place to address staffing deficiencies.

*This is the action plan for MG8a, b, c, & d.*

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG8a-87. Complete Baseline Training and Qualification improvements. Refer to I/CATS Issue 55598 for a description of this plan and to SA1a Procedures and Training corrective actions.

BJC/MG8a-88. Conduct analysis of BJC nuclear safety staffing needs and initiate staffing actions.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG8a-87. Greg Vaughn  
BJC/MG8a-88. John Lyons

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG8a-87. January 7, 2002  
BJC/MG8a-88. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/MG8a-87. October 1, 2002  
BJC/MG8a-88. February 1, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG8a-87. Objective evidence for closure of the 14 associated actions  
BJC/MG8a-88. Copy of memo from the Deputy General Manager summarizing the results of the staffing analysis

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MG8a-87. I5598 and associated 14 training and qualification improvement plan actions

**Issue BJC/MG8: ORO and BJC have not established minimum nuclear safety competencies for program, project, and FMs.**

**RECOMMENDATION BJC/MG8b**

Based on interviews and review of documents prepared since the BJC contract was awarded, it is clear that minimum training qualifications and experience need to be extended to subcontractors.

**DESCRIPTION OF CORRECTIVE ACTION:**

*See MG8a*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

**Issue BJC/MG8: ORO and BJC have not established minimum nuclear safety competencies for program, project, and FMs.**

**RECOMMENDATION BJC/MG8c**

**BJC should ensure that DOE 5480.20A, *Personnel Selection, Qualifications, and Training Requirements for DOE Nuclear Facilities*, is included in the BJC WSS.**

**DESCRIPTION OF CORRECTIVE ACTION:**

*See MG8a*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**



Issue BJC/MG8: ORO and BJC have not established minimum nuclear safety competencies for program, project, and FMs.

**RECOMMENDATION BJC/MG8d**

BJC should ensure that revised procedures on technical qualifications are flowed down to subcontractors.

**DESCRIPTION OF CORRECTIVE ACTION:**

*See MG8a*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

**Issue BJC/MG9: Subcontractors who conduct USQDs are not required to follow the BJC-NS-1001 procedure. In fact, four different procedures are being used by subcontractors at the five sites under BJC's jurisdiction. None of these procedures have been reviewed and approved by DOE.**

**RECOMMENDATION BJC/MG9a**

**Expedite resolution of previous ORO review comments on the BJC USQD procedure (BJC-NS-1001) and approve it per 10 CFR 840.203(b). Resolve whether BJC's subcontractor USQD procedures also need DOE approval.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MG9a-89.	Obtain DOE-ORO approval of BJC USQD procedure and issue procedure.
BJC/MG9a-90.	Develop and issue revision to BJC Exhibit E technical specification to make BJC USQD procedure BJC-NS-1001 mandatory for use by BJC subcontractors.
BJC/MG9a-91.	Modify affected BJC subcontracts to incorporate revised Exhibit E technical specification (120 days after DOE-ORO approval of USQD procedure).

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MG9a-89.	Bruce Wilson
BJC/MG9a-90.	Bruce Wilson
BJC/MG9a-91.	Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MG9a-89.	April 1, 2001
BJC/MG9a-90.	April 1, 2001
BJC/MG9a-91.	April 1, 2001

**EXPECTED COMPLETION DATE:**

BJC/MG9a-89.	May 30, 2002
BJC/MG9a-90.	July 1, 2002
BJC/MG9a-91.	September 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG9a-89.	Copy of DOE-ORO USQD procedure approval letter and copy of approved procedure
BJC/MG9a-90.	Copy of Exhibit E technical specification
BJC/MG9a-91.	Copy of modified subcontracts or direction to use the USQD procedure

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MG9a-89.	DOE-ORO approval of the USQD procedure
--------------	--

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MG9a-89.

I/CATS A4745

BJC/MG9a-90.

I/CATS A4746 and A4750

**Issue BJC/MG10: Very little SB-related training has been given to ORO and BJC personnel.**

**RECOMMENDATION BJC/MG10a**

Both ORO and BJC should conduct an analysis of SB training needs based on specific job requirements and ensure that BJC and ORO develop minimum technical qualifications for program/project managers and nuclear safety managers and personnel that are inclusive of nuclear safety-related knowledge, skills, education, and training.

**DESCRIPTION OF CORRECTIVE ACTION:**

*See Actions for MG8a*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

**Issue BJC/MG11: Many SB documents are being prepared by subcontractors with little oversight from BJC.**

**RECOMMENDATION BJC/MG11**

**BJC should ensure that adequate oversight is given to subcontractors preparing SB documents, including the flowdown and adherence to BJC's corporate SB expectations (as revised).**

**DESCRIPTION OF CORRECTIVE ACTION:**

- |              |   |
|--------------|---|
| BJC/MG11-92. | Develop an integrated DOE-ORO EM/BJC process flowchart and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards  |
| BJC/MG11-93. | Revise BJC-NS-1002, "Safety Documentation for Nuclear Category 2 & 3 Facilities" to address programmatic assessment recommendations, process improvements, requirements for maintenance crosswalk, requirements for implementation plans, and to make the procedure mandatory for subcontractors. |
| BJC/MG11-94. | Revise BJC-NS-1002 to include joint DOE and BJC DSA review points:  |
| BJC/MG11-95. | Revise and issue proforma contract Exhibit E to make BJC procedures for Nuclear Safety and Nuclear Criticality Safety mandatory for subcontractors.   |
| BJC/MG11-96. | Issue directed change to subcontractors responsible for Category 2 and 3 Facilities to comply with the new Nuclear Safety Technical Specification, Exhibit E-1.   |

*See also, actions for MG3 and MG8.*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- |              |              |
|--------------|--------------|
| BJC/MG11-92. | Bruce Wilson |
| BJC/MG11-93. | Bruce Wilson |
| BJC/MG11-94. | Bruce Wilson |
| BJC/MG11-95. | Bruce Wilson |
| BJC/MG11-96. | Bruce Wilson |

**CORRECTIVE ACTION INITIATION DATE:**

- |              |                  |
|--------------|------------------|
| BJC/MG11-92. | February 1, 2002 |
| BJC/MG11-93. | February 1, 2002 |
| BJC/MG11-94. | February 1, 2002 |
| BJC/MG11-95. | February 1, 2002 |
| BJC/MG11-96. | February 1, 2002 |

**EXPECTED COMPLETION DATE:**

- |              |              |
|--------------|--------------|
| BJC/MG11-92. | May 31, 2002 |
| BJC/MG11-93. | July 1, 2002 |
| BJC/MG11-94. | July 1, 2002 |
| BJC/MG11-95. | July 1, 2002 |
| BJC/MG11-96. | July 1, 2002 |

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MG11-92. Copies of integrated process flowchart and DSA guides  
BJC/MG11-93. Revised BJC-NS-1002  
BJC/MG11-94. Revised BJC-NS-1002  
BJC/MG11-95. Revised Exhibit E technical specification  
BJC/MG11-96. Copy of notice to subcontractors regarding mandatory Exhibit E-1

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MG11-92. DOE-ORO participates in the SB Working Group. As such their input is incorporated into the overall SB improvement initiatives.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MG11-92. I/CATS A4365  
BJC/MG11-93. Similar to I/CATS A4744  
BJC/MG11-95. Similar to I/CATS A4745  
BJC/MG11-96. Similar to I/CATS A4746

**Issue BJC/SB1: Many SB documents do not adequately identify safety controls, either engineered or administrative. Safety significant SSCs are not always identified. Where relied on, they were not derived from the SB documents, nor are they forced to be maintained through the TSR or OSRs.**

**RECOMMENDATION BJC/SB1a**

Activities relying on the new TSR controls for the Paducah Building C-410 and certain DOE Material Storage Areas (DMSAs) should not be restarted until the ORO NSD issues are resolved (see the facility report in Appendix E).

**DESCRIPTION OF CORRECTIVE ACTION:**

*See also actions for MG-3 and MG-11 for overall SB process improvement initiatives.*

- |              |   |
|--------------|---|
| BJC/SB1a-97. | Conduct SB technical adequacy assessment to supplement SB flowdown assessment, document results, define corrective actions, and enter actions in I/CATS.  |
| BJC/SB1a-98. | Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards. |
| BJC/SB1a-99. | Develop a Paducah CAP and basis for remediation of nuclear criticality safety restricted areas in C-410.  |

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- |              |              |
|--------------|--------------|
| BJC/SB1a-97. | Bruce Wilson |
| BJC/SB1a-98. | Bruce Wilson |
| BJC/SB1a-99. | Gordon Dover |

**CORRECTIVE ACTION INITIATION DATE:**

- |              |                  |
|--------------|------------------|
| BJC/SB1a-97. | February 4, 2002 |
| BJC/SB1a-98. | February 1, 2002 |
| BJC/SB1a-99. | February 7, 2002 |

**EXPECTED COMPLETION DATE:**

- |              |                           |
|--------------|---------------------------|
| BJC/SB1a-97. | March 1, 2002 (complete)  |
| BJC/SB1a-98. | May 31, 2002              |
| BJC/SB1a-99. | March 12, 2002 (complete) |

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- |              |  |
|--------------|--|
| BJC/SB1a-97. | Copy of SB technical adequacy assessment report                          |
| BJC/SB1a-98. | Copy of SB integrated process flowchart and copies of the DSA guides     |
| BJC/SB1a-99. | Copy of the Paducah CAP for remediation of restricted NCS areas in C-410 |

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB1a-97. Concur with integrated process flowchart and DSA guides

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB1a-97. Similar to I/CATS A4742  
BJC/SB1a-98. I/CATS A4365



**Issue BJC/SB1: Many SB documents do not adequately identify safety controls, either engineered or administrative. Safety significant SSCs are not always identified. Where relied on, they were not derived from the SB documents, nor are they forced to be maintained through the TSR or OSRs.**

**RECOMMENDATION BJC/SB1b**

**USQD evaluations should be done against both the approved SB and pending revisions until the revised documents are approved.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB1b-100. Define and implement additional improvements to the document control and records management system for AB documents.

**Discussion:**

*USQD evaluations are performed against the approved..(active) safety basis. USQDs issued after the cutoff date of the most recent submittal (pending DOE review/approval) are tracked as active changes until incorporated into the next update. These controls are being defined in procedure, BJC-NS-1011, "Control of Safety Basis Documents."*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB1b-100. John Jabaley

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB1b-100. November 2, 2001

**EXPECTED COMPLETION DATE:**

BJC/SB1b-100. March 21, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB1b-100. Copy of new procedure, BJC-NS-1011

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB1b-100. Duplicate of I/CATS A4372

Issue BJC/SB1: Many SB documents do not adequately identify safety controls, either engineered or administrative. Safety significant SSCs are not always identified. Where relied on, they were not derived from the SB documents, nor are they forced to be maintained through the TSR or OSRs.

**RECOMMENDATION BJC/SB1c**

*See SB2a and SB2b*

**DESCRIPTION OF CORRECTIVE ACTION:**

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

**Issue BJC/SB2: Technical deficiencies exist in the hazards and accident analyses, including, in some cases, the exclusion of certain hazards and accident scenarios.**

**RECOMMENDATION BJC/SB2a**

The hazard analysis section of SB documentation should present the logical progression of the hazards, the risk posed by the current operations, appropriate control selection, and the basis for acceptability of the SB document.

**DESCRIPTION OF CORRECTIVE ACTION:**

- |               |   |
|---------------|---|
| BJC/SB2a-101. | Conduct SB technical adequacy assessment to supplement SB flowdown assessment, document results, define corrective actions, and enter actions in I/CATS.            |
| BJC/SB2a-102. | Develop corporate level DSA application guides for use in development of 10 CFR 830 compliant DSAs and graded safety documents for less than category 3 facilities. |
| BJC/SB2a-103. | Submit updated BJC 10 CFR 830 Implementation Plan to DOE.   |

*Note: See also MG-3 actions for overall SB process improvements.*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- |               |              |
|---------------|--------------|
| BJC/SB2a-101. | Bruce Wilson |
| BJC/SB2a-102. | Bruce Wilson |
| BJC/SB2a-103. | Jeff West    |

**CORRECTIVE ACTION INITIATION DATE:**

- |               |                  |
|---------------|------------------|
| BJC/SB2a-101. | February 4, 2002 |
| BJC/SB2a-102. | February 1, 2002 |
| BJC/SB2a-103. | January 7, 2002  |

**EXPECTED COMPLETION DATE:**

- |               |                          |
|---------------|--------------------------|
| BJC/SB2a-101. | March 1, 2002 (complete) |
| BJC/SB2a-102. | May 31, 2002             |
| BJC/SB2a-103. | April 10, 2002           |

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- |               |   |
|---------------|---|
| BJC/SB2a-101. | Copy of SB technical adequacy assessment report       |
| BJC/SB2a-102. | Copies of DSA application guides                      |
| BJC/SB2a-103. | Copy of SB process flowchart and copies of DSA guides |

**DOE SUPPORT ACTION REQUIRED? (specify)**

- |               |   |
|---------------|---|
| BJC/SB2a-101. | DOE-ORO and BJC jointly performed the SB technical adequacy assessment. Also, DOE-ORO participates in the SB Working Group; as such reviews and concurs with the SB process improvements and the DSA application guides. No further action required by DOE-ORO. |
|---------------|---|

LINK TO OTHER CORRECTIVE ACTION? (specify)

BJC/SB2a-101.  
BJC/SB2a-102.

Similar to I/CATS A4742  
I/CATS A4365

**Issue BJC/SB2: Technical deficiencies exist in the hazards and accident analyses, including, in some cases, the exclusion of certain hazards and accident scenarios.**

**RECOMMENDATION BJC/SB2b**

As part of the 10 CFR 830 implementation plan, consider the potential cost effectiveness of evaluating certain hazards (such as natural phenomena) and perhaps external events (such as an aircraft crash) at a site-wide level for each of the five BJC sites. Individual SB documents could then reference the site-wide assessment rather than consuming significant resources to evaluate such hazards when there are no expected benefits from a control perspective (e.g., would not expect seismic upgrading for BJC's facilities). However, if there are relevant feasible controls that should be implemented to mitigate such hazards (e.g., inventory controls on dispersible radiological materials), these should be considered in the individual facility SB document.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB2b-104. Generic technical issues associated with DSA development will be addressed by the joint BJC/DOE SB Working Group, with guidance documents issued regarding DSA development as determined to be needed. This guidance will supplement the DSA guides being developed.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB2b-104. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB2b-104. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB2b-104. September 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB2b-104. Guidance documents as determined by SB Working Group or memo from SB Working Group stating no guidance documents needed

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB2b-104. DOE-ORO is working with BJC on the SB Working Group and will concur with the process, guidance, and DSA guides

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB2b-104. Similar to I/CATS A4365

**Issue BJC/SB3: Many SAR and BIO documents do not adequately reflect current organizations, activities, missions, and hazards.**

**RECOMMENDATION BJC/SB3a**

Existing approved SARs and BIOs should meet 10 CFR 830.207(b) and 830.202(c) requirements for an annual update.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB3a-105. Annual updates and/or 10 CFR 830 compliant upgrades are being processed to achieve compliance with the requirements of 10 CFR 830 Subpart B.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB3a-105. Jeff West

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB3a-105. November 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB3a-105. April 10, 2003

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB3a-105. Copy of BJC to DOE-ORO letter summarizing the 10 CFR 830-compliant annual updates and overall 10 CFR 830 compliance status 4/10/03

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB3a-105. DOE-ORO participates in the SB Working Group, thus, provides input throughout the update and upgrade processes. DOE-ORO approval of the 10 CFR 830-compliant DSAs will be required following BJC's submittal of the new DSAs.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue BJC/SB3: Many SAR and BIO documents do not adequately reflect current organizations, activities, missions, and hazards.**

**RECOMMENDATION BJC/SB3b**

Revise the implementation plan for updating existing SB documents (and, if necessary, request an extension for compliance with the 10 CFR 830 deadline) to address issues on the adequacy of existing SB documentation and expectations for implementing the safe harbor methods.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB3b-106. Submit updated BJC 10 CFR 830 Implementation Plan to DOE.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB3b-106. Jeff West

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB3b-106. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB3b-106. April 10, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB3b-106. Copy of updated DSA implementation plan

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB3b-106. DOE-ORO participates in the SB Working Group, thus, provides input throughout the update and upgrade processes. DOE-ORO approval of the 10 CFR 830-compliant DSAs will be required following BJC's submittal of the new DSAs.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB3b-106. Related to I/CATS A4371

**Issue BJC/SB3: Many SAR and BIO documents do not adequately reflect current organizations, activities, missions, and hazards.**

**RECOMMENDATION BJC/SB3c**

ORO and BJC need to work together, with insights and guidance from the HQ program offices, to agree on the right balance (i.e., considering cost effectiveness and safety assurance) of SB documentation and approaches that reflect the nuclear facility hazards and operations at sites under ORO's jurisdiction.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB3c-107. Submit updated BJC 10 CFR 830 Implementation Plan to DOE.

*Note: see also actions for MG-11 for overall SB process improvements.*

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB3c-107. Jeff West

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB3c-107. January 7, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB3c-107. April 10, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB3c-107. Copy of updated 10 CFR 830 Implementation Plan

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB3c-107. DOE-ORO participates in the SB Working Group, thus, provides input throughout the update and upgrade processes. DOE-ORO approval of the 10 CFR 830-compliant.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB3c-107. Related to I/CATS A4371



**Issue BJC/SB3: Many SAR and BIO documents do not adequately reflect current organizations, activities, missions, and hazards.**

**RECOMMENDATION BJC/SB3d**

Re-evaluate the policy with respect to safety documentation for radiological facilities (e.g., develop a format and content guide for an Auditable Safety Analysis [ASA] that is something like the 10 CFR 830 nuclear health and safety plan or other documentation of the of the hazard categorization determination, such as a checklist or a brief report).

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB3d-108.            Develop corporate level DSA application guides for use in development of 10 CFR 830 compliant DSAs and graded safety documents for less than category 3 facilities.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB3d-108.            Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB3d-108.            February 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB3d-108.            May 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB3d-108.            Copies of the DSA guides

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB3d-108.            DOE-ORO participates in the SB Working Group, thus, provides input throughout the update and upgrade processes. DOE-ORO approval of the 10 CFR 830-compliant DSAs will be required following BJC's submittal of the new DSAs.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB3d-108.            Related to I/CATS A4371

**Issue BJC/SB4: The ORO NCS Program still does not meet the intent of DOE Policy 450.5, *Line Environment, Safety, and Health Oversight*. ORO does not have an approved formal program in place, and the corrective actions for the open safety issues identified in May 2000 relative to this program have not been closed. Most of the BJC SARs and BIOs do not adequately describe the criticality safety program, not do they have the requisite commitments in the TSRs and OSRs.**

**RECOMMENDATION BJC/SB4b**

As new SBs are developed per 10 CFR 830, provide the expected programmatic attributes in the SMP chapter and TSRs as recommended in the safe harbors (e.g., DOE-STD-3009).

**DESCRIPTION OF CORRECTIVE ACTION:**

- BJC/SB4b-109. Develop corporate level DSA application guides for use in development of 10 CFR 830 compliant DSAs and graded safety documents for less than category 3 facilities.
- BJC/SB4b-110. Develop an integrated DOE-ORO EM/BJC process and DSA guides for Management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards.
- BJC/SB4b-111. Develop standard SMP descriptions.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/SB4b-109. Bruce Wilson  
BJC/SB4b-110. Bruce Wilson  
BJC/SB4b-111. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

- BJC/SB4b-109. February 1, 2002  
BJC/SB4b-110. February 1, 2002  
BJC/SB4b-111. February 21, 2002

**EXPECTED COMPLETION DATE:**

- BJC/SB4b-109. May 31, 2002  
BJC/SB4b-110. May 31, 2002  
BJC/SB4b-111. May 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- BJC/SB4b-109. Copy of SB process flowchart, copies of DSA guides, and copies of generic SMP descriptions

**DOE SUPPORT ACTION REQUIRED? (specify)**

- BJC/SB4b-109. DOE is working with BJC through the SB Working Group. The process flowchart, DSA guides, and SMP descriptions will have DOE concurrence.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB4b-109. I/CATS A4365

**Issue BJC/SB5: Technical deficiencies exist in the hazard categorization of nuclear and radiological facilities; therefore, some radiological facilities could be nuclear facilities and some Hazard Category 3 facilities may be Hazard Category 2.**

**RECOMMENDATION BJC/SB5a**

Develop a hazard categorization review plan that includes (a) revising the procedures per DOE-STD-1027 and Environmental Health (EH) HQ interpretation memos, (b) validating the adequacy of previous hazard category determinations (including a prioritization for questionable facilities), and (c) developing a process to manage hazard categorization discrepancy discoveries (e.g., Building C-410 radiological facility and the Y-12 Old Salvage Yard) with nuclear criticality hazards, reclassification of radiological facilities to nuclear status, or reclassification of facilities from Hazard Category 3 to Hazard Category 2, etc.

**DESCRIPTION OF CORRECTIVE ACTION:**

- |               |   |
|---------------|---|
| BJC/SB5a-112. | Develop new BJC hazard identification, facility categorization, and inventory control procedure, compliant with governing standards.        |
| BJC/SB5a-113. | For all BJC category 3 facilities, issue to DOE for approval an updated hazards assessment document with updated hazard categorization.     |
| BJC/SB5a-114. | For "suspect" radiological facilities, issue to DOE for approval an updated hazards assessment document with updated hazard categorization. |

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- |               |              |
|---------------|--------------|
| BJC/SB5a-112. | Bruce Wilson |
| BJC/SB5a-113. | Jeff West    |
| BJC/SB5a-114. | Mike Taylor  |

**CORRECTIVE ACTION INITIATION DATE:**

- |               |                  |
|---------------|------------------|
| BJC/SB5a-112. | February 1, 2002 |
| BJC/SB5a-113. | February 1, 2002 |
| BJC/SB5a-114. | February 1, 2002 |

**EXPECTED COMPLETION DATE:**

- |               |                |
|---------------|----------------|
| BJC/SB5a-112. | July 1, 2002   |
| BJC/SB5a-113. | April 10, 2003 |
| BJC/SB5a-114. | August 1, 2002 |

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

- |               |   |
|---------------|---|
| BJC/SB5a-112. | Copy of new procedure   |
| BJC/SB5a-113. | Copy of submittal to DOE with updated hazards assessment document for Category 3 nuclear facilities   |
| BJC/SB5a-114. | Copy of submittal to DOE with updated hazards assessment document for suspect radiological facilities |

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB5a-112. DOE-ORO is working with BJC through the SB Working Group. Thus, DOE-ORO input will be provided on an ongoing basis through the hazards assessment documentation process.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**Issue BJC/SB6: The use of Alternate Release Fractions (ARFs) and Release Fractions (RFs) as part of the hazard analysis process may have led to underestimating the potential unmitigated consequences to the public for many of the postulated accident scenarios.**

**RECOMMENDATION BJC/SB6a**

As new SBs are developed per 10 CFR 830, apply the DOE-HDBK-3010 bounding ARFs and RFs unless the DOE approval authority approves alternate values based on sufficient technical justification. (Note: This also applies to the use of alternate ARFs and RFs for hazard categorizations)

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/SB6a-115. Develop an integrated DOE-ORO EM/BJC process and DSA guides for management of DSA documents for Category 2 and 3 facilities, consistent with 10 CFR 830 Subpart B requirements and other applicable requirements and standards.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/SB6a-115. Bruce Wilson

**CORRECTIVE ACTION INITIATION DATE:**

BJC/SB6a-115. February 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/SB6a-115. May 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/SB6a-115. Copies of SB process flowchart and sample of DSA application guides

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/SB6a-115. DOE-ORO participates in the SB Working Group, thus, provides input throughout the update and upgrade processes. DOE-ORO approval of the 10 CFR 830 – compliant DSAs will be required following BJC's submittal of the new DSAs.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/SB6a-115. I/CATS A4365

**Issue BJC/SB7: FHAs were found to be missing, out of date, or inconsistent with the SB documents (e.g., with respect to the combustible loading limits, maximum potential fires, status of fire systems, etc.).**

**RECOMMENDATION BJC/SB7a**

**BJC and DOE should ensure that the applicable portions of DOE O 420.1 are incorporated into the WSS and that FHAs are performed at BJC nuclear facilities and integrated into the SB documents.**

*Refer to SA1a FP SMP corrective action SA1a-3.*

**DESCRIPTION OF CORRECTIVE ACTION:**

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

**CORRECTIVE ACTION INITIATION DATE:**

**EXPECTED COMPLETION DATE:**

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

**DOE SUPPORT ACTION REQUIRED? (specify)**

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

1. Refer to SA1a-3 for WSS revision
2. SMP assessments SA1a-19 (Bruce Wilson)/Refer to I/CATS A4365 for FHA

**APPENDIX C**

**Bechtel Jacobs Company LLC  
Corrective Actions In Response  
to the  
DOE-HQ, DOE-ORO and BJC Assessments  
of  
Bechtel Jacobs Company LLC  
and  
U.S. Department of Energy  
Oak Ridge Operations Office**



**Issue BJC/IS-1: Feedback and improvement process has not been effectively implemented to assure an expected degree of ISMS maturity.**

**DESCRIPTION OF CORRECTIVE ACTION (S8256/ I0055606 & I0055607):**

Establish Effective Implementation of Feedback and Improvement Process to Assure Maturity

- BJC/IS-1.1. Conduct assessment of the effectiveness of OFI corrective actions
- BJC/IS-1.2. Develop and implement an OFI CAP
- BJC/IS-1.3. Complete an evaluation of the BJC Issues Management Trend Analysis Process using Six Sigma
- BJC/IS-1.4. Issue Trend Analysis CAP
- BJC/IS-1.5. Complete an INPO assessment of the BJC corrective action process
- BJC/IS-1.6. Issue INPO CAP

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/IS-1.1. Garry Suenkel
- BJC/IS-1.2. Garry Suenkel
- BJC/IS-1.3. Jerry Grissett
- BJC/IS-1.4. Jerry Grissett
- BJC/IS-1.5. Jerry Grissett
- BJC/IS-1.6. Jerry Grissett

**CORRECTIVE ACTION INITIATION DATE:**

- BJC/IS-1.1. December 3, 2001
- BJC/IS-1.2. February 1, 2002
- BJC/IS-1.3. January 2, 2002
- BJC/IS-1.4. May 1, 2002
- BJC/IS-1.5. March 25, 2002
- BJC/IS-1.6. May 1, 2002

**EXPECTED COMPLETION DATE:**

- BJC/IS-1.1. February 1, 2002 (complete)
- BJC/IS-1.2. May 1, 2002
- BJC/IS-1.3. April 15, 2002
- BJC/IS-1.4. May 10, 2002
- BJC/IS-1.5. April 30, 2002
- BJC/IS-1.6. May 24, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

Provide copies of the:

- BJC/IS-1.1. Management assessment report
- BJC/IS-1.2. OFI CAP
- BJC/IS-1.3. Six Sigma report of the Trend Analysis Performance Improvement Project (PIP)
- BJC/IS-1.4. Trend CAP
- BJC/IS-1.5. INPO report
- BJC/IS-1.6. INPO CAP

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

I/CATS #S8256/I0055606  
I/CATS #S8256/I0055607

**Issue BJC/IS-2: ISMS implementation by BJC failed to adequately assure ongoing effectiveness and continuous improvement.**

**DESCRIPTION OF CORRECTIVE ACTION (S8256/ I0055606 & I0055607):**

Reach an expected degree of ISM maturity

- BJC/IS-2.1. Conduct outside expert reviews of ISMS implementation
- BJC/IS-2.2. Evaluate ISM progress on BJC projects
- BJC/IS-2.3. Develop SME program and issue new and/or revised BJC procedures, as appropriate
- BJC/IS-2.4. Develop and issue BJC SME Program Management Description document
- BJC/IS-2.5. Ensure appointment by Functional Managers of BJC SME

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

- BJC/IS-2.1. Garry Suenkel
- BJC/IS-2.2. Trent Rogers
- BJC/IS-2.3. Keith Bradley
- BJC/IS-2.4. Keith Bradley
- BJC/IS-2.5. Keith Bradley

**CORRECTIVE ACTION INITIATION DATE:**

- BJC/IS-2.1. January 14, 2002
- BJC/IS-2.2. January 10, 2002
- BJC/IS-2.3. February 4, 2002
- BJC/IS-2.4. February 4, 2002
- BJC/IS-2.5. February 4, 2002

**EXPECTED COMPLETION DATE:**

- BJC/IS-2.1. August 16, 2002
- BJC/IS-2.2. August 30, 2002
- BJC/IS-2.3. August 30, 2002
- BJC/IS-2.4. August 30, 2002
- BJC/IS-2.5. April 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

Provide copies of the:

- BJC/IS-2.1. Documentation of outside experts review
- BJC/IS-2.2. Documentation of ISM reviews
- BJC/IS-2.3. Changed company procedures, as appropriate
- BJC/IS-2.4. SME Program Management Process Description document
- BJC/IS-2.5. Approved BJC SME list

**DOE SUPPORT ACTION REQUIRED? (specify)**

N/A

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

I/CATS #S8256/I0055606

I/CATS #S8256/I0055607

**MANAGEMENT COMMITMENT BJC/MC1: DOE-ORO and BJC, through the SB Working Group, identified the need to conduct a joint assessment of each BJC Category 2 and 3 facility in order to define baseline status upon which to approve continued operations, concurrent with development of new 10 CFR 830 Subpart B DSAs. The assessments will build upon results of previous internal and external BJC SB assessments.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MC1-1. Conduct a joint DOE/BJC Nuclear Facility Safety Assessment of SB for each BJC nuclear facility to ensure that the current SB provides an adequate foundation for ongoing operations and activities pending completion of updates to the SB documents in accordance with 10 CFR 830 Subpart B.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MC1-1. BJC/MC1-1. John Lyons and Arlen Schade

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MC1-1. March 4, 2002

**EXPECTED COMPLETION DATE:**

BJC/MC1-1. June 30, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MC1-1. Copy of assessment reports for each of the Category 2 and 3 assessments and copy of the summary assessment report

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MC1-1. DOE-ORO will participate in the joint DOE-ORO/BJC assessments

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MC1-1. These assessments constitute follow-up to the SB flowdown assessments and the technical adequacy assessment covered by I/CATS 4366 and 4372

**MANAGEMENT COMMITMENT BJC/MC2: Through a series of internal assessments and the preparation of an updated NTS report, BJC has determined the need to validate nuclear facility categorization and inventory controls. The NTS report indicated the lack of a consistent, comprehensive set of technical bases for categorizing the nuclear facilities that had been managed by multiple contractors at five sites in three different states.**

**RECOMMENDATION BJC/MC2-1:**

BJC/MC2-1. Validate facility categorization and inventory controls.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MC2-1. Validate facility categorization and inventory controls.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MC2-1. Bruce Wilson and Mike Taylor

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MC2-1. February 1, 2002

**EXPECTED COMPLETION DATE:**

BJC/MC2-1. August 1, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MC2-1. Updated list of nuclear facilities, including categorizations, and copy of inventory control procedure/document

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MC2-1. DOE concurrence required on facility categorization for Category 3 facilities downgraded to radiological

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MC2-1. Related to SA1a action regarding SMP for inventory control

**MANAGEMENT COMMITMENT BJC/MC3:** During the process of conducting SB flowdown assessments of all Category 2 and 3 nuclear facilities, BJC determined the need for an independent review board to review SB-related issues, assist with problem resolution, and provide guidance on facility categorization and preparation of new 10 CFR 830-compliant DSAs, as well as USQDs.

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MC3-1. Implement a SB Review Board.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MC3-1. John Lyons

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MC3-1. October 1, 2001

**EXPECTED COMPLETION DATE:**

BJC/MC3-1. December 19, 2001 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MC3-1. Copy of Safety Basis Review Board (SBRB) charter and copy of minutes for the first SBRB meeting

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MC3-1. None required; the SBRB is a BJC review board. Periodically, DOE-ORO representatives attend the meetings to discuss specific issues.

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A

**MANAGEMENT COMMITMENT BJC/MC4: During the process of conducting SB flowdown assessments of all Category 2 and 3 nuclear facilities, BJC identified the need for a more in-depth review of the technical adequacy of SB documents.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MC4-1. Conduct an independent review of the AB management process/program to assess its technical adequacy and to more clearly identify areas needing improvement.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MC4-1. John Lyons and Mike Hitchler

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MC4-1. February 4, 002

**EXPECTED COMPLETION DATE:**

BJC/MC4-1. March 1, 2002 (complete)

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MC4-1. Copy of SB technical adequacy assessment report

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MC4-1. DOE-ORO participated in this joint BJC/DOE-ORO assessment

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

BJC/MC4-1. Similar to I/CATS 5075 (see also SB1a)



**MANAGEMENT COMMITMENT BJC/MC5: During the process of conducting SB flowdown assessments of all Category 2 and 3 nuclear facilities, BJC identified the need to review and update, as necessary, the Authorization Agreements.**

**DESCRIPTION OF CORRECTIVE ACTION:**

BJC/MC5-1. Complete annual update for Authorization Agreements.

**BECHTEL JACOBS COMPANY RESPONSIBLE PERSON:**

BJC/MC5-1. Bruce Wilson and Mike Taylor

**CORRECTIVE ACTION INITIATION DATE:**

BJC/MC5-1. February 15, 2002

**EXPECTED COMPLETION DATE:**

BJC/MC5-1. May 31, 2002

**CORRECTIVE ACTION CLOSURE DOCUMENTATION REQUIRED:**

BJC/MC5-1. Copy of index of updated Authorization Agreements and copies of example agreements

**DOE SUPPORT ACTION REQUIRED? (specify)**

BJC/MC5-1. DOE-EM will approve the Authorization Agreements

**LINK TO OTHER CORRECTIVE ACTION? (specify)**

N/A