



## Department of Energy

Washington, DC 20585

QA: QA

FEB 06 2002

R. I. Law  
Bechtel SAIC Company, LLC  
1180 Town Center Drive, M/S 761  
Las Vegas, NV 89144

### VERIFICATION OF CORRECTIVE ACTIONS AND CLOSURE OF DEFICIENCY REPORT (DR) BSC-02-D-031

The Office of Quality Assurance staff has evaluated the corrective actions of DR BSC-02-D-031 and determined the results to be satisfactory. As a result, the DR is considered closed.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or John R. Doyle at (702) 794-5021.

A handwritten signature in black ink, which appears to read "James Blaylock" but is likely Ram Murthy as per the typed name below.

Ram Murthy, Acting Director  
Office of Quality Assurance

OQA:JB-0627

Enclosure:  
DR BSC-02-D-031



Printed with soy ink on recycled paper

WM-11  
NM5507  
Rec'd from  
NMSS

FEB 06 2002

cc w/encl:

N. K. Stablein, NRC, Rockville, MD  
Robert Latta, NRC, Las Vegas, NV  
S. W. Lynch, State of Nevada, Carson City, NV  
Engelbrecht von Tiesenhausen, Clark County, Las Vegas, NV  
H. R. Cox, BSC, Mercury, NV, M/S 755  
E. F. Finch, BSC, Mercury, NV, M/S 760  
S. H. Horton, BSC, Las Vegas, NV  
R. P. Keele, BSC, Las Vegas, NV, M/S 280  
D. T. Krisha, BSC, Las Vegas, NV  
D. M. Kunihiro, BSC, Las Vegas, NV  
J. S. Martin, BSC, Las Vegas, NV, M/S 280  
C. M. Sparks, BSC, Las Vegas, NV, M/S 763  
J. F. Williamson, BSC, Las Vegas, NV, M/S 761  
J. R. Doyle, NQS, Las Vegas, NV  
W. J. Glasser, NQS, Las Vegas, NV  
K. A. Hodges, NQS, Las Vegas, NV  
D. G. Opielowski, NQS, Las Vegas, NV  
J. R. Dyer, DOE/YMSCO, Las Vegas, NV  
C. E. Hampton, DOE/YMSCO, Las Vegas, NV  
S. P. Mellington, DOE/YMSCO, Las Vegas, NV  
D. G. Horton, DOE/YMSCO, Las Vegas, NV  
J. M. Replogle, DOE/YMSCO, Las Vegas, NV  
B. M. Terrell, DOE/YMSCO, Las Vegas, NV

**OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.**

ORIGINAL  
NO. 3 & RED STAMP

8. ☒ DEFICIENCY REPORT  
☐ CORRECTIVE ACTION REPORT  
NO. DR BSC-02-D-031  
PAGE 1 OF  
QA: *YQA*

**DEFICIENCY/CORRECTIVE ACTION REPORT**

*EFF. 19-01*

<b>1. Controlling Document:</b> LP-OM-027Q "Exploratory Studies Facility Equipment/Hydrocarbon Leak Inspection and Reporting" Rev 0/ICN 1/Specification 01501&01502	<b>2. Related Report No.:</b> SA-SSF-2001-018
<b>3. Responsible Organization:</b> Site Operations/Field Superintendent	<b>4. Discussed With:</b> Robert Law, John Williamson, Ralph Dresel
<b>5. Requirement:</b> LP-OM-027Q, 5.1.2h) ..." a monthly summary identifying equipment number, engine type, total fuel usage and total operating hours per month is generated using Attachment 6, ESF Underground Equipment/Fuel Usage Summary; and the types of hydraulic and lube oils or fluids of concern used in each piece of underground equipment are identified on the monthly summary (Attachment 6)."	

Attachment 6: ESF Underground Equipment/Fuel Usage Monthly Summary Instructions: 6. Engine type: Enter type of engine.

**6. Description of Condition:**

As identified by Self Assessment for Field Generated Records (SA-SSF-2001-018), Blocks 6 and 10-13 of Attachment 6: ESF Underground Equipment/Fuel Usage Summary was not completed for the majority of the forms completed in July 2001

**7. Initiator:**  
Edward F. Fitch  
*Edward F. Fitch* Date 11/19/2001

**9. Does a stop work condition exist? (Not required for a DR)**  
☐ Yes ☒ No  
If Yes, Check One: ☐ A ☐ B ☐ C ☐ D

**10. Recommended Actions:**

Notify Responsible Superintendents to ensure records are accurate and complete.  
Correct or identify affected records.

**11. QA Review:**  
QAR *John R. Doyle* Date 12/05/01.

**12. Response Due Date:**  
10 working days from issuance

**13. DOQA Issuance Approval:**

Printed Name Robert D. Davis

Signature *James Blaylock*

Date 12/5/01

**22. Corrective Actions Verified**

QAR *John R. Doyle* Date 02/05/02.

**23. Closure Approved by:**

DOQA *James Blaylock* Date 2/6/02

## TYPE RESPONSE:

- ☐ Initial  
☒ Complete  
☐ Amended

OFFICE OF CIVILIAN  
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U.S. DEPARTMENT OF ENERGY  
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DR/CAR NO. BSC-02-D-031

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OF

QA: *YQA*

*EFF*  
12.18.01

## DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

## 14a. Immediate Actions:

E-mail Field Superintendent (Law) to Equipment Superintendent (Williamson) directing in part "...assure that the records are complete and correct from July to the present, and assure that the forms are filled out completely and correctly in the future." (Attachment 1)

"ESF Underground/Fuel Usage Summary" record for July corrected.

Compliance Date: 11/15/2001

## 14. Remedial Actions:

See Blocks 14a and 17.

## 15. Extent of Condition:

This condition was identified in the July records only. A review, subsequent to the actions in Block 14a. of these records found the July record corrected and complete as were the records for the months prior and following. There is no impact to quality because the nature of the information is redundant as the only type of engine used is a diesel engine.

## 16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)

Failure to follow the procedure and generate a complete and accurate record.

## 17. Action to Preclude Recurrence:

The cause of the deficiency identified in the DR, failure to follow procedural requirements, has been previously identified during project performance assessment activities and BSC-02-D-017. The 2001 Integrated Safety Management System (ISMS) Annual Review Report and the follow up root cause determination both identified a project problem in enforcing procedural compliance. BSC management has initiated Action to Preclude Recurrence of this problem via issuance of a BSC position statement (see attachment 2). Also, in response to the root cause determination findings associated with the 2001 ISMS Annual Review Report, BSC management has developed a corrective action plan and a schedule for implementation (see attachment 3). The actions taken by BCS management in responding to this generic project problem is considered sufficient Action to Preclude Recurrence for the deficiency identified in this DR. Training and enforcement of procedure compliance will be an ongoing effort in BSC's improvement plans.

## 18. Due Date: 1/30/2002

- ☐ For submittal of complete response  
☒ For completion of corrective action

## 19. Response by:

*Am's*

Robert Law

Date 12/18/2001

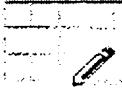
*BSC QA*  
*12/19/01*  
*Dec. 9'*  
Phone 295-3699

## 20. Evaluation:

- ☒ Accept ☐ Partially Accept ☐ Reject

## 21. Concurrence:

DOQA *James Blaylock* Date *1/3/02*



Robert Law  
11/15/2001 03:44 PM

To: John Williamson/YM/RWDOE@CRWMS  
cc: Edward Fitch/YM/RWDOE@CRWMS, Rudy Johnson/YM/RWDOE@CRWMS

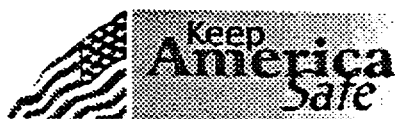
Subject: Self Assessment SA SSFS 2001-018 corective action

QA:N/A Exclusionary

The subject self assessment identified that the "underground equipment/fuel usage monthly summary" form was not completed for the majority of July, 2001.

As corrective action, you are directed to complete/correct the identified forms, assure that the records are complete and correct from July to the present, and assure that the forms are filled out completely and correctly in the future.

Attachment 1 - BSC-02-D-031



BSC Today

12/04/2001 10:20 AM

Sent by: Susan Watson

To: BSC East, BSC West

cc:

Subject: A message from Ken Hess about compliance with procedures

QA:N/A Exclusionary

The result of the analyses that BSC performed on our quality and safety deficiencies identified inadequate management systems as the root cause. This root cause must be fixed in order for us to be performing up to our expectations. We are currently developing a Performance Improvement Transition Plan, led by Nancy Williams, which will set us on the path to a strong nuclear safety culture. One of the primary purposes of this plan is to gain control of our destiny by developing and implementing the appropriate management systems through the Quality Assurance and Project procedures.

We have had some management failures in the past, which resulted in procedures not being followed to an acceptable level. Those failures will be remedied, and I expect that in the future Project personnel will immediately notify their manager if they do not have the necessary resources in terms of budget, personnel, training, and schedule to both meet a deadline and follow procedures. There will be no retribution to Project personnel who stop a job because a procedure cannot be followed, or because they believe a job cannot be performed safely and in a high quality manner. I expect this strong nuclear safety culture from top to bottom in the organization.

Having this culture means, among other things, that we will follow all procedures, and if compliance cannot be ensured then either the task must not be performed, or, if the timing of the task is critical, an Expedited Change Notice in accordance with AP-5.1Q Section 5.8, will be completed. This practice is in accordance with the current policy.

All Project personnel must have read and understand the applicable procedure prior to starting any assignment. When performing work, it is acceptable to print out copies of procedures in order to have them immediately available to reference job steps, as needed. However, it is also the responsibility of each person using a printed copy of a procedure to verify that it is the correct version in effect before use.

Procedural compliance applies to all staff assignments and tasks and is essential to the job we have been hired to do by our customer.

If you have any questions or concerns regarding this policy, please contact your manager.

Attachment 2 - BSC-02-D-031

**Procedure Compliance Deficiency Corrective Action Plan**

ID	Task Name	Duration	Start	Finish	Responsibility	December					January				
						25	02	09	16	23	30	06	13	20	27
1	ISM Deficiency Root Cause Analysis - Root Cause Corrective Actions	24 days	Wed 12/05/01	Thu 01/24/02	Peterson										
2	Management Training	24 days	Wed 12/05/01	Thu 01/24/02	Davis										
3	Establish a definition for strict adherence	2 days	Wed 12/05/01	Thu 12/06/01	Frederici/Myatt										
4	Establish a set of expectations for strict adherence	2 days	Wed 12/05/01	Thu 12/06/01	Frederici/Myatt										
5	Develop training on strict adherence	2 days	Mon 12/10/01	Tue 12/11/01	Frederici/Myatt										
6	Train the Strict Adherence Mentoring Committee	6 days	Wed 12/12/01	Thu 12/20/01	Frederici/Myatt										
7	Train Site employees on strict adherence	12 days	Mon 01/07/02	Thu 01/24/02	SAM Committee										
8	Indoctrinate Site Managers and Leads on strict adherence	1 day	Mon 12/10/01	Mon 12/10/01	Sparks										
9	Accountability	2 days	Wed 12/05/01	Thu 12/06/01	Davis										
10	Define roles, responsibilities, authority, and accountability relative to strict adherence	2 days	Wed 12/05/01	Thu 12/06/01	Frederici/Myatt										
11	Develop a system for positive/negative consequences relative to strict adherence	2 days	Wed 12/05/01	Thu 12/06/01	Frederici/Myatt										
12	Problem Detection	24 days	Wed 12/05/01	Thu 01/24/02	O'Conner										
13	Appoint a Strict Adherence Mentoring Committee (cross disciplined)	2 days	Wed 12/05/01	Thu 12/06/01	Davis/Law										
14	Develop a committee charter	8 days	Mon 12/10/01	Thu 12/20/01	SAM Committee										
15	Establish a policy/program for line management oversight of strict adherence	6 days	Mon 12/10/01	Thu 01/03/02	Davis										
16	Communicate the policy/program to Site employees	4 days	Mon 01/07/02	Thu 01/10/02	Sparks										

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# Procedure Compliance Deficiency Corrective Action Plan

ID	Task Name	Duration	Start	Finish	Responsibility	December					January				
						25	02	09	16	23	30	06	13	20	27
17	Develop a set of strict adherence performance metrics	12 days	Mon 01/07/02	Thu 01/24/02	SAM Committee										
18	Scheduling	16 days	Mon 12/10/01	Tue 01/15/02	Moore										
19	Establish a policy relative to schedule expectations	8 days	Mon 12/10/01	Thu 12/20/01	Dresel/Law										
20	Priority Meeting Charter	6 days	Wed 01/02/02	Thu 01/10/02	Myatt										
22	Develop charter	2 days	Wed 01/02/02	Thu 01/03/02	Myatt										
22	Communicate charter to affected Site employees	4 days	Mon 01/07/02	Thu 01/10/02	Myatt										
23	Schedule Meeting Charter	8 days	Wed 01/02/02	Tue 01/15/02	Dresel/Law										
24	Develop charter	4 days	Wed 01/02/02	Tue 01/08/02	Dresel/Law										
25	Communicate charter to affected Site employees	4 days	Wed 01/09/02	Tue 01/15/02	Dresel Law										
26	Worker Selection	20 days	Wed 12/05/01	Thu 01/17/02	Sparks										
27	Develop nuclear culture experience questionnaire	1 day	Wed 12/05/01	Wed 12/05/01	Dresel										
	Staff complete questionnaire	2 days	Thu 12/06/01	Mon 12/10/01	Dresel										
29	Assess current staff skill mix relative to nuclear culture experience	1 day	Tue 12/11/01	Tue 12/11/01	Sparks										
30	Craft complete questionnaire	4 days	Mon 12/10/01	Thu 12/13/01	Law										
31	Assess current craft skill mix relative to nuclear culture experience	4 days	Mon 12/17/01	Thu 12/20/01	Sparks										
32	Develop plan to address deficiencies	8 days	Mon 01/07/02	Thu 01/17/02	Sparks										

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**Procedure Compliance Deficiency Corrective Action Plan**

ID	Task Name	Duration	Start	Finish	Responsibility	December					January				
						25	02	09	16	23	30	06	13	20	27
33	External Mentoring	17 days	Wed 12/05/01	Mon 01/14/02	Taylor										
34	Contract external mentor's service	10 days	Wed 12/05/01	Thu 12/20/01	Taylor										
35	External mentor on Site	0 days	Mon 01/07/02	Mon 01/07/02	Taylor										
36	Establish external mentoring program	4 days	Mon 01/07/02	Thu 01/10/02	Mentor/Sparks										
37	Communicate external mentoring program to employees	4 days	Mon 01/07/02	Thu 01/10/02	Sparks										
38	Begin external mentoring	1 day	Mon 01/14/02	Mon 01/14/02	Mentor										
39	Internal Mentoring	5 days	Mon 01/07/02	Mon 01/14/02	Taylor										
40	Establish internal mentoring program	4 days	Mon 01/07/02	Thu 01/10/02	Mentor/Committee										
41	Communicate internal mentoring program to employees	4 days	Mon 01/07/02	Thu 01/10/02	Sparks										
42	Begin internal mentoring	1 day	Mon 01/14/02	Mon 01/14/02	SAM Committee										

Attachment 3 - BSC-02-D-031

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# Procedure Compliance Deficiency Corrective Action Plan

ID	Task Name	Duration	Start	Finish	Responsibility	December					January				
						25	02	09	16	23	30	06	13	20	27
43	ISM Deficiency Root Cause Analysis - Generic Cause Corrective Actions	18 days	Mon 12/17/01	Thu 01/24/02	Peterson										
44	Feedback from User	10 days	Wed 01/02/02	Thu 01/17/02	Taylor										
45	Assess existing feedback processes	8 days	Wed 01/02/02	Tue 01/15/02	Davis/Law										
46	Develop plan to address deficiencies	8 days	Mon 01/07/02	Thu 01/17/02	Davis/Law										
47	Change Processes (Procedure, Work Order, Drawing)	18 days	Mon 12/17/01	Thu 01/24/02	Dresel										
48	Develop training on the existing change processes	6 days	Mon 12/17/01	Thu 01/03/02	Dresel/Garrett										
49	Train employees on the existing change processes	12 days	Mon 01/07/02	Thu 01/24/02	SAM Committee										

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**Procedure Compliance Deficiency Corrective Action Plan**

ID	Task Name	Duration	Start	Finish	Responsibility	December					January				
						25	02	09	16	23	30	06	13	20	27
50	Corrective Action Effectiveness Self Assessments	16 days	Mon 01/07/02	Thu 01/31/02	Davis										
51	Develop assessment plan	12 days	Mon 01/07/02	Thu 01/24/02	Davis										
52	Establish an assessment schedule	4 days	Mon 01/28/02	Thu 01/31/02	Davis										

Attachment 3 - BSC-02-D-031

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OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.

8. ☒ DR/CAR  
☐ Stop Work Order

BSC--02-D-031

No.

PAGE

OF

QA: ☒ QA

DBO  
2/5/02

DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Verification of Committed Corrective Actions to Deficiency Report BSC-02-D-031

Block 14a: Immediate Action:

See original response Attachments 1. Verified YES Underground Fuel Usage Equipment Hours/Fuel Monthly Summary for July with Blocks 6, 10 through 13 completed. In addition, verified same reports for June, August and September for the same attributes and found to be satisfactory.

Block 14 Remedial Actions:

See Block

Block 15 Extent of Condition:

See Complete Response.

Block 16 Cause:

None Required

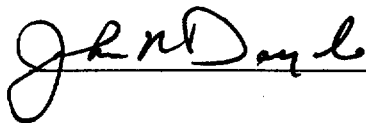
Block 17 Action to Preclude Recurrence:

See Attachment 2 and 3 of the original response. As result of the Root Cause Analysis Report for Integrated Safety Management System Annual Review Report Deficiency DF-1 (See Attachment 4), BSC management has undertaken a corrective action plan as called out in Attachments 1 and 2 to this DR. This plan consisted of initiating an Strict Adherence Policy (Attachment 5) for all Area 25 personnel. A mentoring program was also initiated with responsible individuals assigned was also implemented (Attachment 6). Attachment 7 to this DR contains the course materials utilized to conduct this training to this plan and Attachment 8 is the schedule for this training for both Staff and Craft personnel with asterisks verifying Strict Adherence Mentoring Orientation training had been documented on the Site Operations Weekly Activities review Meeting Attendance Rosters.

The Above Committed Corrective Actions have been satisfactorily verified.

This Deficiency Report is considered closed.

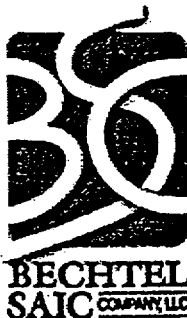
QAR:



John R. Doyle

Date:

02/05/02.



# ROOT CAUSE ANALYSIS REPORT

For

## *Integrated Safety Management System Annual Review Report Deficiency DF-1*

[Signature]  
D.D. Davis

11-27-01

Date

[Signature]  
R.J. Niggemeyer

11-27-01

Date

[Signature]  
H.R. Cox

11/27/01

Date

[Signature]  
D.E. Frederici

11-27-2001

Date

[Signature]  
A.R. Myatt

11-27-2001

Date

[Signature]  
B.D. Reinert

11/28/01

Date

[Signature]  
R.A. Thompson

11/27/01

Date

Bechtel SAIC Company, LLC (BSC) Site Operations management chartered a team to perform a root cause investigation and analysis of the failure of Area 25 management to either fully implement or require full implementation of procedures as identified by deficiency DF-1 in the 2001 Integrated Safety Management (ISM) System Annual Review Report. The analysis was performed in accordance with procedure AP-16.4Q, *Root Cause Determination*. The team investigated and analyzed the problems described in the 2001 ISM report, evaluated other reports with similar themes and the associated corrective actions, and determined causes for the cited deficiency. The team also identified corrective actions that would prevent recurrence of this or similar problems.

The team concluded that there was one root cause and one generic cause that resulted in the deficiency of the failure to fully implement or require full implementation of procedures. These causes are summarized below:

- **Root Cause:** Enforcement of procedure compliance

Management enforcement of procedure compliance has been less than adequate in developing a culture that values strict adherence to procedural requirements.

Weaknesses in the following areas were considered contributing causes:

- *Management training*
- *Accountability*
- *Problem detection*
- *Scheduling*
- *Worker selection*

- **Generic Cause:** Procedure development and implementation

The process for development and implementation of procedures does not result in a program that promotes procedure compliance. The existing process has weaknesses that individually do not cause procedural non-compliance. However, when taken as a whole, these weaknesses present a challenge that deters the user from achieving procedure compliance.

Weaknesses in the following areas were considered contributing causes:

- *Use*
- *Training*
- *Feedback from user*
- *Procedure categorization*
- *Ownership*
- *Change process*

The team has developed specific recommended corrective actions for each of the causes listed above. Additionally, the root cause team recommends that BSC management develop and track performance metrics to evaluate the effectiveness of recommended corrective action implementation.

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## 1.1 ISM OVERVIEW

## 1.2 ISM AT THE YUCCA MOUNTAIN PROJECT

### 1.3 PROCEDURE HISTORY

Procedures were decentralized prior to February 1999. A systematic review of procedure adherence was performed after several Corrective Action Reports (CARs) were issued in 1998. The Process Validation and Reengineering (PVAR) effort was initiated as a uniform management response to these CARs. The PVAR effort centralized procedures, initiated new procedures, deleted some procedures, and combined Q-related procedures under DOE ownership. As a result of the PVAR effort procedure AP-5.1Q, *Plan and Procedure Preparation, Review, and Approval*, was issued in June 1999 and has undergone one major revision, seven interim change notices (ICNs) and one expedited change notice (ECN) since then. The first revision was to correct issues identified in several deficiency reports. The subsequent revisions have attempted to correct deficiencies and to change document hierarchy. There are currently ten Document Action Requests (DARs) for procedure AP-5.1Q awaiting resolution.



## 2. PROBLEM AND CHARTER

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## 2.1 PROBLEM STATEMENT

The ISM annual review report identified the following deficiency:

DF-1: Area 25 management has failed to fully implement procedures nor required full implementation of procedures as evidenced by:

1. Work planners were not developing work orders within the requirements specified in the Work Request/Work Order Procedure.
2. Checklists that include identification of ES&H requirements are used as tools for identifying/analyzing hazards in the work planning process but are not formally approved or included in project procedures.
3. All identified work hazards and their controls/mitigations, as listed in applicable JSAs, are not incorporated into the step-by-step tasks of the Work Order. Identified generic hazards within the work order and assuring their mitigation was not being conducted when performing the work.
4. Work was not conducted in accordance with the approved work order (Work Request/Work Control Procedure). When unforeseen hazards were identified during actual work, management did not follow the documented process for changing the work order to include the hazard identification and controls that were implemented.
5. The Hazard Analysis Procedure requirements for work orders were not consistently implemented during work order development. Management has not fully implemented the requirements specified in AP-OM-006Q, *Work Request/Work Order Process*, for identifying hazards and their controls/mitigations.
6. Post-job documented feedback in the work control process is poorly used.
7. Use of the Skill of the Craft procedure is not properly documented by management.
8. Implementation of the Area 25 Conduct of Operations Procedure, LP-OM-006 did not reflect the requirements for control of excessive overtime, formal documentation of the surveillance of the underground communications system, incorporation of "temporary" Standing Work Orders in long-term use into the Conduct of Operations Procedure and completion of critiques of abnormal events. In addition, no facility manager was designated for Area 25 as required.

## 2.2 CHARTER

The charter for this root cause analysis was to investigate and analyze the events that resulted in the deficiency, determine the causal factors in accordance with procedure AP-16.4Q, and submit the results of this investigation in a report to include recommended corrective actions addressing the causes.

### 3. INVESTIGATION METHOD

The cause evaluation for the deficiency identified in the ISM report proceeded according to the methods described in this section.

#### 3.1 EVALUATION TEAM

##### 3.1.1 Evaluation Team

BSC Site Operations management chartered a team to perform a root cause investigation of the deficiency identified in the ISM report. No organizational constraints or time limits were placed on the evaluation.

##### 3.1.2 Team Members

The following individuals comprised the Root Cause Evaluation Team.

##### Team Member, Company, Title (Team Function)

- 1) Dwayne Davis, BSC, Operations Manager (Sponsoring Manager)
- 2) James Niggemyer, BSC, Field Engineer (Leader)
- 3) Howard Cox, BSC, Site QA Representative (Member)
- 4) Anthony Myatt, BSC, Work Control Lead (Member)
- 5) David Frederici, BSC, Systems Operations Lead (Member)
- 6) Bruce Reinert, Los Alamos National Laboratory, Field Test Representative (Member)
- 7) Robert Thompson, BSC, ES&H Assessments (Member)

Expertise and experience provided by the Root Cause Evaluation Team includes:

- Nuclear power plant deficiency resolution experience,
- Quality problems and root cause analysis experience,
- DOE projects experience, and
- YMP Exploratory Studies Facility quality program evolution experience.

#### 3.2 PROCEDURE

The Team Leader was trained and certified in the use of the TapRooT® process and the requirements of Root Cause Determination as explained in procedure AP-16.4Q. The team was assembled and met initially to become familiar with the problem to be evaluated and to determine the methodology for analysis. It was determined that a database was needed to catalog as many aspects of the problem as reasonably possible. Once appropriate data had been collected using TapRooT techniques, the team used other analytical methods as well as the experience and expertise contained within the team itself to reach conclusions and recommend corrective actions. The details of the TapRooT analysis are available in the TapRooT Database.

### 3.3 PROBLEM INVESTIGATION PROCESS

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#### 3.3.1 Data Collection

The TapRoot evaluation process was used as the basis for the subject matter to be included in interviews with appropriate personnel. A total of 25 interviews were conducted and resulting data was recorded forming the database needed for analysis.

#### 3.3.2 Data Analysis

The team evaluated the data collected and determined the primary cause(s) of the problem. The team conducted an evaluation of the cause contributing factors and sub-factors using a cause and effect analysis technique.

### 3.4 CORRECTIVE ACTION DETERMINATION

Following the determination of the primary causes and the identification of contributing factors and sub-factors, the team determined corrective actions needed to bring about changes and improvements necessary to preclude recurrence of the deficiency. The identified causes and associated recommended corrective actions are discussed in detail in Section 4.

#### 4. ISM DEFICIENCY CAUSES AND RECOMMENDED CORRECTIVE ACTIONS

The team concluded that there was one root cause and one generic cause that resulted in the deficiency of failure of Area 25 management to fully implement or require full implementation of procedures. These causes and the recommended corrective actions to prevent recurrence of this or similar deficiencies are summarized below:

##### 4.1 ROOT CAUSE: ENFORCEMENT OF PROCEDURE COMPLIANCE

Management enforcement of procedure compliance has been less than adequate in developing a culture that values strict adherence to procedural requirements.

The following were considered contributing causes:

- **Management training:** There is a lack of a universal understanding of procedure compliance. Terms such as "nuclear culture" and "verbatim compliance" are used throughout the project, but are not defined. Consistent objectives and expectations are not identified and communicated across and within the project.

Recommended Corrective Action: Establish a policy clearly defining terms such as "nuclear culture" and "verbatim compliance", and their expectations relative to roles, responsibilities, authority, and accountability for procedure compliance. Formally communicate that policy to all employees.

- **Accountability:** Roles, responsibilities, authority, and accountability relative to procedure use and compliance are not clearly defined or sufficiently communicated by management.

Recommended Corrective Action: In addition to the recommended corrective action under *Management training* above, establish an accountability system with consequences (positive and negative reinforcement) linked to management expectations. Reference recommended corrective action for Common Cause No. 2 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- **Problem detection:** Programs and processes for detecting and reporting procedural deficiencies and non-compliance conditions have not been effective or timely. Real time oversight of work by management, feedback from procedure users, and use of trending tools are lacking.

Recommended Corrective Action: Establish a policy regarding line management oversight in their areas of responsibility relative to procedure compliance. The policy should address management performance of assessments, establishing and monitoring performance metrics, and taking action when progress fails to achieve expectations. Reference recommended corrective action for Common Cause No. 3 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- **Scheduling:** Work is seldom properly prioritized due to misunderstood, miscommunicated, or changing priorities; inadequate availability of resources; or lack of funding. This results in inadequate allocation of time for review, planning, and execution of quality work.

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**Recommended Corrective Action:** Establish a policy regarding schedule expectations. Communicate that policy to the workforce, establishing an atmosphere where procedure compliance has a higher value than schedule compliance. Develop integrated resource loaded schedules and integrated baseline schedules with effective change control. Also, develop lower level resource-loaded schedules with accurate depiction of process steps, and realistic duration necessary to perform work consistently. Reference recommended corrective action for Common Cause No. 1 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- ***Worker selection:*** Personnel are, in some cases, assigned tasks or responsibility involving components of procedure compliance who do not always have the necessary training, qualification, or nuclear industry experience/exposure to adequately perform those tasks.

**Recommended Corrective Action:** Assess current employee qualifications and skill mix relative to nuclear culture experience and where deficiencies are identified develop a plan to train, mentor and/or supplement the work force. Reference recommended corrective action for Common Cause No. 1 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

#### 4.2 GENERIC CAUSE: PROCEDURE DEVELOPMENT AND IMPLEMENTATION

The process for development and implementation of procedures does not produce result in a program that promotes procedure compliance. The existing process has weaknesses that individually do not cause procedural non-compliance. However, when taken as a whole, these weaknesses present a challenge that deters the user from achieving procedure compliance.

The following were considered contributing causes:

- ***Use:*** Procedures contain inconsistent formats, excessive references to specifications, codes, and standards, and often an inappropriate level of detail.

**Recommended Corrective Action:** Develop a procedure writer's guide that defines the style and format requirements for project procedures based on DOE and commercial nuclear standards for administrative and technical procedures. Revise procedure AP-5.1Q to eliminate style and format requirements, and focus on the process of creating and changing procedures. Assess existing programs and procedures relative to the revised AP-5.1Q and procedure writers guide requirements. Reference recommended corrective action for Common Cause No. 4 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- ***Training:*** Communication of requirements and expectations through effective and meaningful training is not occurring at the Project. Procedure writers and procedure users are often not adequately trained to the procedures applicable to their assignments. Training to procedures takes two forms, either familiarization or understanding and proficiency. Frequently, familiarization is chosen as the training method when training for understanding and proficiency would be more appropriate.

**Recommended Corrective Action:** Benchmark training programs at commercial nuclear facilities and DOE nuclear facilities with emphasis on the following attributes: training

effectiveness measurements (testing); job task analysis as a tool for training identification, development and processes; focus on understanding and proficiency rather than familiarization; and expectations for management and subject matter experts to be involved in training. Revise training processes and management expectations to reflect the best practices. Reference recommended corrective action for Common Cause No. 5 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- **Feedback from user:** Feedback from procedure users is lacking. The workforce does not effectively utilize existing mechanisms.

Recommended Corrective Action: Assess the effectiveness of the existing feedback mechanisms and revise those programs as necessary. Communicate the feedback methods to the workforce and enforce the expectation that feedback must be provided when procedure deficiencies or improvements are identified.

- **Procedure categorization:** The hierarchy and grouping of procedures does not lend itself to easy identification of the applicable procedures that govern a specific scope of work. Currently, procedure-numbering schemes identify the procedure type, and QARD relationship or functional area.

Recommended Corrective Action: Change the current hierarchy of procedures such that procedures are grouped into manuals according to a specific scope of work (i.e., all procedures that apply to procurement activities should be tabulated under one unique and self identifying manual or numbering scheme). Benchmark procedure programs at DOE facilities and/or commercial nuclear facilities to identify best procedure development and control practices. Reference recommended corrective action for Common Cause No. 4 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- **Ownership:** The ownership of procedures is often misplaced. Within an organization procedure ownership is often at a level far removed from the user level. Across organizations procedure ownership is often not well aligned with responsibility.

Recommended Corrective Action: Transfer to BSC ownership of all procedures which BSC, the National Laboratories, and USGS perform the work, including AP-5.1Q. Appoint a BSC functional manager to own each procedure in alignment with responsibility. Require that procedures be owned by the implementing organization at the lowest reasonable level. Reference recommended corrective action for Common Cause No. 4 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

- **Change process:** The procedure change process is overly rigid, cumbersome, and time consuming. The Quality Assurance Requirements Document (QARD) and the Integrated Safety Management Quality Assurance Plan (ISMQAP) allow latitudes in the change process that are not reflected in the current process.

Recommended Corrective Action: Revise procedure AP-5.1Q to allow a more efficient method of change control for procedures utilizing the latitudes provided by the QARD and ISMQAP. Implement one interim change process as opposed to the two currently used.

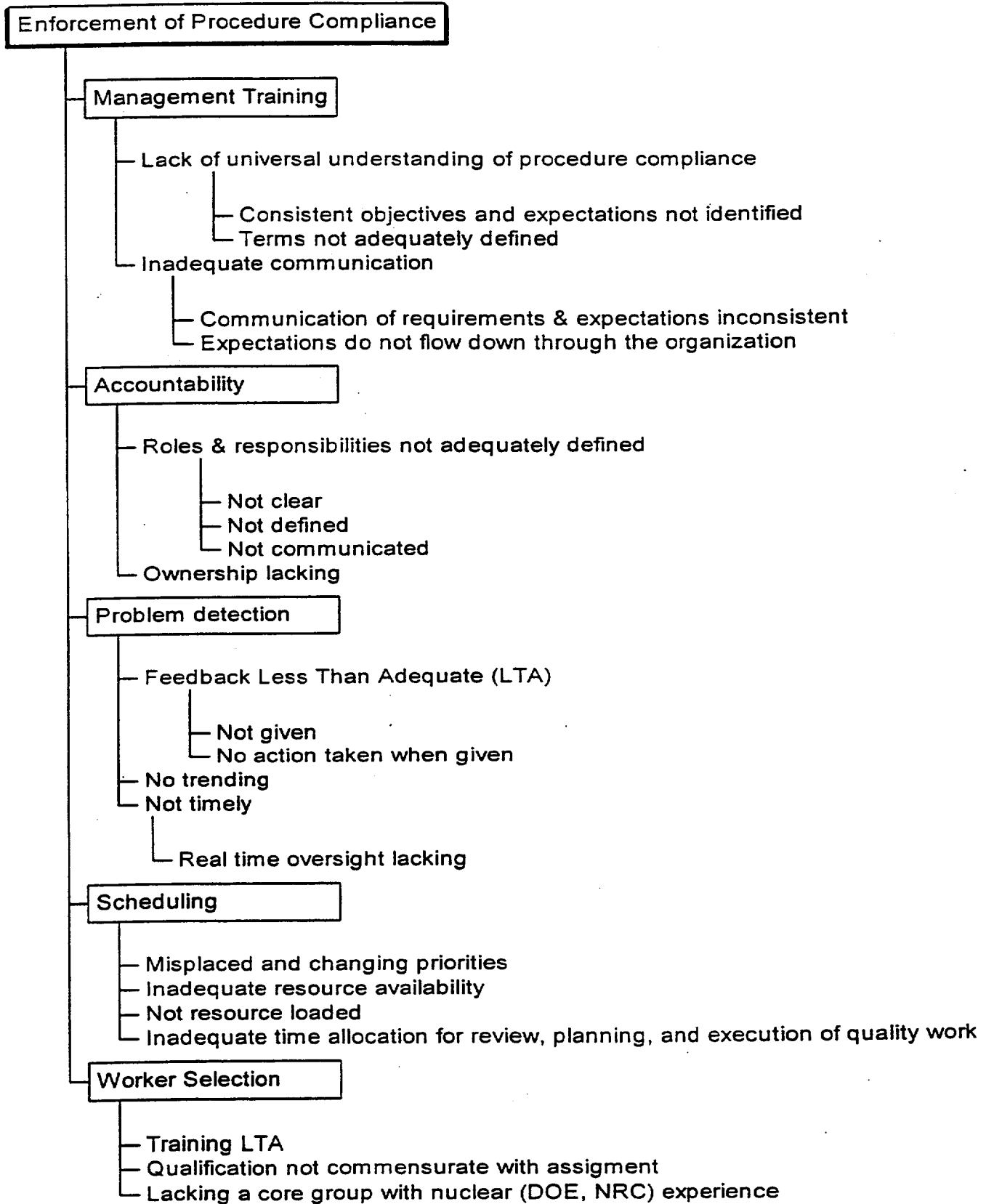
Reference recommended corrective action for Common Cause No. 4 in the Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002.

ATTACHMENT 4 TO

BSC-02-D-031

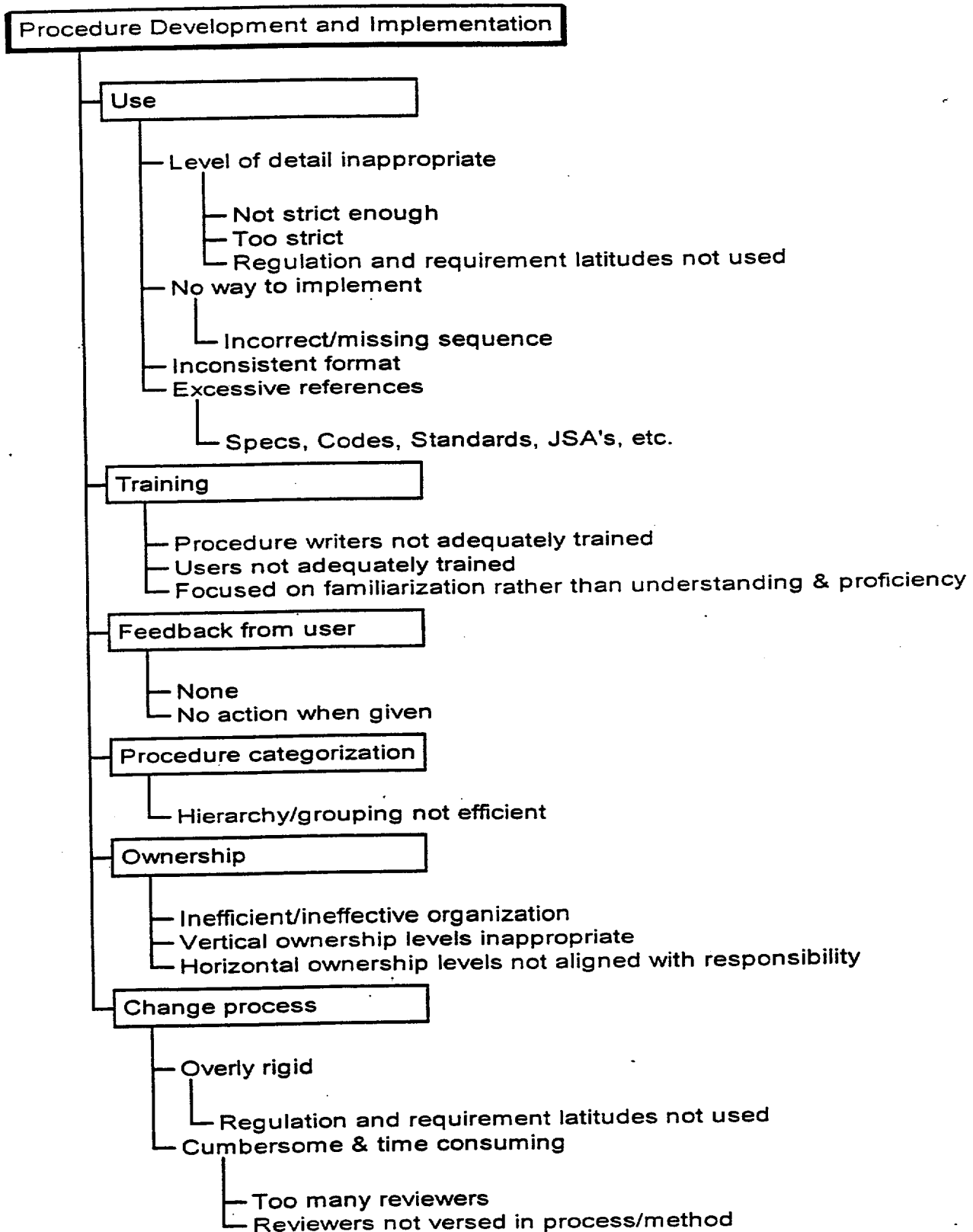
P 11 of 14

## CAUSE AND EFFECT ANALYSIS CHART





## CAUSE AND EFFECT ANALYSIS CHART



## DOCUMENTS REVIEWED LIST

1. AP-5.1Q, *Plan and Procedure Preparation, Review, and Approval*
2. AP-OM-006Q, *Work Request/Work Order Process*
3. AP-ESH-004, *Occupational Safety and Health Program*
4. AP-ESH-008, *Hazards Analysis*
5. AP-2.23Q, *Work Request/Work Order Process*
6. AP-REG-001, *Managing Lessons Learned*
7. AP-16.4Q, *Root Cause Determination*
8. AP-OM-001, *Conduct of Operations*
9. Integrated Safety Management System Annual Review Report
10. Root Cause Analysis Report for CAR BSC-01-C-001 and CAR BSC-01-C-002
11. Root Cause Analysis Report for Yucca Mountain Project Technical Document Deficiencies
12. DOE/RW-0333P, *Quality Assurance Requirements and Description*
13. Addendum 1, DOE/RW-0333P, *Integrated Safety Management Quality Assurance Program*
14. Numerous Work Orders



ATTACHMENT 5  
TO DR BSC-02-D-031 p1 of 2



## Interoffice Memorandum

QA: N/A

To: Area 25 Personnel

No.: 0110021091

From: Charles M. Sparks *CMS*

Date: 10 Jan. 02

Re: ~~Strict Adherence~~ Guidelines

CC: See below

---

The attached page outlines the guidelines for strict adherence to implementing documents that I expect all Site employees to understand and follow.

If you have questions or comments please contact me at 5-7560.

cc: w/attachment

Thomas M. Leonard, SUM1/423

Thomas A. Peterson, SUM1/423

RPC = 2 pages

### Strict Adherence Definition

The process of following the written rules, requirements, and/or guidelines which constitute the approved directions for executing a task, without deviation but with regard to the consequences of performing those directions.

### Roles, Responsibilities, & Authority

All Project personnel are document users and are expected to follow the cited management expectations. Supervisors, Leads, and Managers take on the additional role of enforcing the requirements of strict adherence. Any person may stop a task, without the fear of retribution, if an implementing document cannot be followed, or if a task cannot be performed safely and in a high quality manner in accordance with those implementing documents.

### Management's Expectations

All Project personnel must review and understand the applicable implementing documents prior to starting any assignment.

It is the responsibility of each person using an implementing document to verify that it is the correct version.

Performance of an activity without the implementing documents present at the work location does not relieve individuals from their responsibility to perform activities correctly and in accordance with those documents.

Under no circumstances are implementing documents to be altered, changed or revised without following the proper review and approval process.

When a task cannot be accomplished as described in the implementing document, or accomplishment of such task would result in an undesirable situation, the task shall be stopped and supervision notified.

Personnel are expected to check their own work before, during, and after execution.

Provide feedback to supervision regarding problems with implementing documents and assist as necessary in resolving those problems.

### Accountability

Personnel will be held accountable for strict adherence through a system of positive and negative reinforcement. Positive reinforcement will be in accordance with the "Time out for Safety" incentive program. Negative reinforcement will be in accordance with the established progressive discipline programs.

# S.A.M. Committee

## Charter

### TEAM MEMBERS:

Bruce Reinert, Mitch Carlgren, Bobby Hungerford, Roger Olson, Sheldon Hollimon, Kirby Ward

### MISSION:

Familiarize our peers with our Strict Adherence Policy and increase their awareness in the importance of following procedures, processes and work order documents. Encouraging them to stop work when the implementing documents cannot be followed, and take appropriate actions to seek solutions.

### OBJECTIVES:

- Awareness of our roles and responsibilities in regard to strict adherence of procedures and work control documents.
- Convey management's expectations that implementing documents are complied with or work is stopped until resolved.
- Show where procedures can be found and how to verify that they are the correct version needed.
- Interact with others to find where problems exist with our procedures, rules and work control documents.
- Be an avenue to remedy problems with implementing documents and identify areas for improvement.
- Demonstrate that blind compliance with undesirable outcomes can be as detrimental as non-compliance. Thinking compliance with desirable outcomes is needed for success.
- Increase awareness in our ability to change documents that do not allow us to perform our work in a safe, efficient or high quality manner.
- Encourage the use of the S.T.A.R. \* method as you proceed with a task.
- Explain how both positive and negative reinforcement will be used to hold us accountable for Strict Adherence to documents.

\*

Stop-before you act.

Think-about what you are about to do.

Act- using direction from your implementing document.

Review- what happened as a result of your act.

### Strict Adherence Definition

The process of following the written rules, requirements, and/or guidelines which constitute the approved directions for executing a task, without deviation but with regard to the consequences of performing those directions.

### Roles, Responsibilities, & Authority

All Project personnel are document users and are expected to follow the cited management expectations. Supervisors, Leads, and Managers take on the additional role of enforcing the requirements of strict adherence. Any person may stop a task, without the fear of retribution, if an implementing document cannot be followed, or if a task cannot be performed safely and in a high quality manner in accordance with those implementing documents.

### Management's Expectations

All Project personnel must review and understand the applicable implementing documents prior to starting any assignment.

It is the responsibility of each person using an implementing document to verify that it is the correct version.

Performance of an activity without the implementing documents present at the work location does not relieve individuals from their responsibility to perform activities correctly and in accordance with those documents.

Under no circumstances are implementing documents to be altered, changed or revised without following the proper review and approval process.

When a task cannot be accomplished as described in the implementing document, or accomplishment of such task would result in an undesirable situation, the task shall be stopped and supervision notified.

Personnel are expected to check their own work before, during, and after execution.

Provide feedback to supervision regarding problems with implementing documents and assist as necessary in resolving those problems.

### Accountability

Personnel will be held accountable for strict adherence through a system of positive and negative reinforcement. Positive reinforcement will be in accordance with the "Time out for Safety" incentive program. Negative reinforcement will be in accordance with the established progressive discipline programs.



BSC Today

12/04/2001 10:20 AM

Sent by: Susan Watson

To: BSC East, BSC West  
cc:

Subject: A message from Ken Hess about compliance with procedures

QA:N/A Exclusionary

The result of the analyses that BSC performed on our quality and safety deficiencies identified inadequate management systems as the root cause. This root cause must be fixed in order for us to be performing up to our expectations. We are currently developing a Performance Improvement Transition Plan, led by Nancy Williams, which will set us on the path to a strong nuclear safety culture. One of the primary purposes of this plan is to gain control of our destiny by developing and implementing the appropriate management systems through the Quality Assurance and Project procedures.

We have had some management failures in the past, which resulted in procedures not being followed to an acceptable level. Those failures will be remedied, and I expect that in the future Project personnel will immediately notify their manager if they do not have the necessary resources in terms of budget, personnel, training, and schedule to both meet a deadline and follow procedures. There will be no retribution to Project personnel who stop a job because a procedure cannot be followed, or because they believe a job cannot be performed safely and in a high quality manner. I expect this strong nuclear safety culture from top to bottom in the organization.

Having this culture means, among other things, that we will follow all procedures, and if compliance cannot be ensured then either the task must not be performed, or, if the timing of the task is critical, an Expedited Change Notice in accordance with AP-5.1Q Section 5.8, will be completed. This practice is in accordance with the current policy.

All Project personnel must have read and understand the applicable procedure prior to starting any assignment. When performing work, it is acceptable to print out copies of procedures in order to have them immediately available to reference job steps, as needed. However, it is also the responsibility of each person using a printed copy of a procedure to verify that it is the correct version in effect before use.

Procedural compliance applies to all staff assignments and tasks and is essential to the job we have been hired to do by our customer.

If you have any questions or concerns regarding this policy, please contact your manager.

1/7/02

ATTACHMENT 7

TO

DR BSC-02-D-031 p1 of 10

# ISM Deficiency Corrective Action Plan



# ISM Deficiency

The deficiency noted the failure of Area 25 management to either fully implement or require full implementation of procedures

# Root Cause Analysis

- Root Cause - Management enforcement of procedure compliance has been less than adequate in developing a culture that values strict adherence to procedural requirements
- Generic Cause - The process for development and implementation of procedures does not result in a program that promotes procedure compliance

# Corrective Action Plan

- Establish guidance for strict adherence to implementing documents
  - define strict adherence
  - define roles, responsibilities, authority, and accountability
  - provide orientation to site employees

# Corrective Action Plan

- Develop a method to detect problems relating to strict adherence
  - appoint a strict adherence mentoring committee
  - establish a program for management/supervision oversight
  - develop a set of performance indicators

# Corrective Action Plan

- Improve work activity scheduling
  - establish a policy relative to schedule expectations
  - develop charters for the Prioritization Team and Scheduling Team

# Corrective Action Plan

- Assess the work force skill mix
  - have staff and craft complete a nuclear culture experience questionnaire
  - asses the questionnaire results
  - develop a plan to address deficiencies
  - establish an external mentoring program
  - establish an internal mentoring program

# Corrective Action Plan

- Ensure feedback mechanisms are adequate to communicate problems
  - assess existing feedback mechanisms
  - develop a plan to address deficiencies

# Corrective Action Plan

- Ensure the work force is aware of the implementing document change processes



# Corrective Action Plan

- Assess the effectiveness of the corrective actions outlined in the plan

# Procedure Compliance Mentoring Schedule STAFF

Craft Tr. Conf. Rm. 116

ATTACHMENT 8 to BSC-02-0-031

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Revised 01.17.08

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NAME	TIME/DATE	NAME	TIME/DATE	NAME	TIME/DATE	NAME	TIME/DATE
* Law, Bob		Burke, Georgia	3:15PM	Calcaterra, Mike	3:15PM	Stone, James	3:15PM
Sparks, Mike		Johnson, Rudy	Wednesday	Cummings, C	Tuesday	James, Gary	Tuesday
		Thomas, Ed	01/09/02	Twine, Richard	01/15/02	Griego, Gene	01/22/02
		Davis, Dwayne		Moore, Randy		Schutt, Ron	
Davis, Dwayne	3:15PM			Myatt, Tony		Schulenburg, Ken	
Devers, John	Monday					Garrett, Chuck	
Finnegan, Kean	01/07/02	Nowka, Paul	7:30AM			Merritt, Dave	
Myatt, Tony		Niggemyer, Jim	Thursday	DeJesus, Steve	7:30AM		
		Williamson, John	01/10/02	Smith, Steve	Wednesday		
* Heiner, Mike	8:00AM	Williams, Willie		Pierro, Keen	01/16/02	Jakus, Patty	7:30AM
Moran, Tim	Monday	Pitterle, Mike		Hopkins, Steve		Venzie, Fred	Wednesday
Johnson, Bill	01/07/02	W.F. Fernow		Olson, Gary		Wilson, Armond	01/23/02
Hermes, Chris						Walton, Andrew	* 1/23/02
		Slack, Walter	3:15PM			Griffith, Ronnie	
McNeely, Doc	7:30AM	Tomek, Tom	Thursday	Fagg, Rennae	3:15PM	Witt, JW	
Newman, Bryan	Tuesday	Gatchalian, Leo	* 01/10/02	West, John	Wednesday	Richardson, John	
Camp, Loretta	01/08/02	Christie, Della		Burke, Ted	01/16/02	Rupp, Trudy	
Spencer, Bob				Scissom, Angela		Dickson, Terry	
Nakasone, Bruce		Sinclair, Bill	8:00AM				
		Bates, Greg *	Monday				
Nelson, Genne	7:30AM	Mickelson, G	01/14/02	Idzior, Ed	3:15PM	Cunningham, R	3:15PM
Fitch, Ed	Wednesday	Weeks, Rick		Woodruff, Jade	Thursday	Wetzel, Judy ✓	Wednesday
* Crumpacker, Gary	01/09/02	Kevin Krank		Lewis, Terry	01/17/02	<del>Taylor, Mike</del>	01/23/02
Swindel, Charles		McFall, Ken		Longhouser, Kitty		Cozzolino, Dan	
						Brune, Eric	
Foster, Richard	9:00AM	Goodhope, Bill	7:30AM			Reitan, Judie	
Gardiner, Errol	Wednesday	Regan, Bob	Tuesday	Latronico, Craig	7:30AM	Scroggins, Kris	
Kovach, Dick	01/09/02	Brounstein, R	01/15/02	Kuchar, Mike	Thursday	Osborne, Dave	
Dresel, Ralph	DOE Trailer	Warnick, Easte		Guthrie, Kurt	01/17/02	Howard, William	
				Wakefield, Mike			
Noel, Rick	3:15PM	McGonigle, B	9:00AM				
Heaney, Jerry	Tuesday	Lewis, Chris	Tuesday				
Skorseth, Bob	01/08/02		01/15/02	Schwartzwalter, L	7:30AM		
Cox, Howard		Conf. Call w/	Town	Jacobson, Kristi	Tuesday		
Ricks, Steve				Payton, Norm	01/22/02		
		Bitsilly, Jules	3:15PM	Dinsmoor, John			
		Wilson, Tom	Monday	Kenney, Debra			
			01/14/02	Martin, John			

\* TRAINL VERIFIED

1/17/02

Procedure Compliance Mentoring Schedule CRAFT  
Craft Tr. Conf. Rm. 116

NAME	TIME/DATE	NAME	TIME/DATE	NAME	TIME/DATE
Blankenship, Aaron	3:15PM	Bennett, Bobby L.	7:30AM	Cain, Jr., Dale L.	3:15PM
Didion, Barbara J.	Monday	Lynch, Danny J.	Thursday	Fuller, Lon A.	Thursday
Fletcher, Freddie L.	01/07/02	Suiter, Owen Neil	01/10/02	Oettinger, Michael J.	01/17/02
Joyner, Larry R.		Dudley, John R.		Spight, Prentiss	
Orozco, Francisco		Cox Jr., Glen		Gang, Robert J.	
Rising, Robert R.		Jones, Randall O.		Wainwright, Vaughn T.	
Smith, Shawn M.		Scott, Wayne R.		Parnell, Erwin R.	
Anderson, Dennis R.	8:00AM	Hollimon, Willie	3:15PM	Young, Bernard W.	7:30AM
Campos, Tony L.	Monday	Avila, James P.	Thursday	Hinton, Don A.	Thursday
Jacobson, Leonard A.	* 01/07/02	Avila, Oscar	01/10/02	Kelso, Larry H.	01/17/02
Lujan, Orlando D.		Sullivan, Preston P.		Knight Jr., Percy L.	
Vavricka, Peter J.		Lopez, Eric R.		Koonce, David S.	
Bartolillo, Henry T.	7:30AM	Beaman, Alan G.	8:00AM	Meier, Stephen D.	
Dennison, Keith H.	Tuesday	Beck, Richard A.	Monday	Nagy, Erno	
DuBois, Joseph A.	01/08/02	Gillum Jr, Robert C.	01/14/02	Richardson III, Johnnie	* 1/23/02
Gutierrez, Raymond F.		Moore, Michael S.		Sears, Frank R.	
Jacobson, Glen P.		Walker, Don L.			
Marks, Richard				Karstensen, Robert	7:30AM
DeVisser Jr., Beirl D.		McKinney, Shane W.	7:30AM	Marsh, James H.	Tuesday
Bowman, Thomas B.	7:30AM	Metler, Daniel D.	Tuesday	Massey, Ronald E.	01/22/02
Roberts, William C.	Wednesday	Hungerford, William A.	01/15/02	Modarelli, Alan	
Noyes, Joseph M.	01/09/02	Rhynard, Charles H.		Truitt Jr., Lee M.	
Paredes, Brasil J.				Baker, David	
Vigil, Maximiano A.		Black, Arthur D. *	3:15PM	Benally, Norman	
Villanueva, Marcelino Jr.	* 1/9/02	Denison, Darryl D.	Monday	Brotherton, Wayne P.	
White, Richard E.		Gilliland, Vern E.	01/14/02		
Lewis, Theodius		Lucas, Richard C.		Carlgren, Mitchell A.	3:15PM
Pancake, Michael		Zimmerman, Gary K.		Sherrard, Richard L.	Tuesday
Reid, Wallace G.				Peters, James L.	01/22/02
		Warburton, Thomas J.	3:15PM	Mertens, Gregory	
		Casteel, James J.	Tuesday	Overson, Devar	
Cannon, Michael K.	3:15PM	Hendricks, Richard L.	01/15/02	Peters, Philip D	
Fuller, Marcus L.	Tuesday	White, Leslie H.		Santos, Roy	
Munoz, Steve F.	01/08/02	Young, Robert D.		Webb, Scott D	
Rising, Ryan R.				Wilson, John F	
		Cooper, Daniel E.	7:30AM		
		Johnson, Jr., Ted G.	Wednesday	Bartlett, John W.	7:30AM
Moorehead, David		Johnson, Glenn E.	01/16/02	McClelland, Mark A.	Wednesday
Pearson, George E.		Patterson, Aaron W.		Swartzbaugh, Daniel S.	01/23/02
McMillen, Charlie D. *	3:15PM			Swartzbaugh, Sydney H.	
Pancake, Kennith R.	Wednesday	Kruthoff, Gregory A.	3:15PM	Williams, Herbert	
Dominguez Jr., Silas	01/09/02	Mungaray, Xavier	Wednesday	Patton, David	
Hayes, Adolph		Ozuna, Anthony G.	01/16/02	Ready, Russell L.	
		Stinar, James A.		Walsh, Dale T.	
		Rajsich, Martin L.			
		Sellers, Raymond D.			

TRAINING VERIFIED