



## Department of Energy

Washington, DC 20585

QA: QA

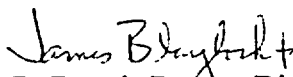
JAN 10 2003

C. M. Sparks  
Bechtel SAIC Company, LLC  
1180 Town Center Drive  
Las Vegas, NV 89144

### VERIFICATION OF CORRECTIVE ACTIONS AND CLOSURE OF DEFICIENCY REPORT (DR) BSC-02-D-086

The Office of Quality Assurance staff has evaluated the corrective actions of DR BSC-02-D-086 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.

  
R. Dennis Brown, Director  
Office of Quality Assurance

OQA:JB-0499

Enclosure:  
DR BSC-02-D-086

cc w/encl:  
N. K. Stablein, NRC, Rockville, MD  
Robert Latta, NRC, Las Vegas, NV (2 cys)  
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8.  DEFICIENCY REPORT  
 CORRECTIVE ACTION REPORT  
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DEFICIENCY/CORRECTIVE ACTION REPORT

SDR03/06/02

1. Controlling Document: Specification #BAB000000-01717-06300-01501 Rev. 0, NWI-ESF-021Q Rev. 1  
2. Related Report No: Checklist Issue # 1025, 1026 RFC #02/006.

3. Responsible Organization: BSC-Site Operations  
4. Discussed With: ED FITZ, JEFF STIENHOFF  
BILL DISTEL, JOHN WILLAMSON, CHUCK GARRETT

5. Requirement:  
Spec.01501, paragraph 3.01 S. 3.a requires that diesel engines be tuned and tested for the exhaust emission constituents specified. Those tests will be used to develop standards (for each engine) which include a 25% allowance factor for engine wear. When subsequent tests show the engine exceeds the standard it must be brought back into compliance with that standard prior to being allowed underground.  
NWI-ESF-021Q provides detailed information on how to develop the initial standards for diesel equipment used underground, it also provides information on subsequent testing for diesel equipment for the 500 hour test. Additionally, it states, "Do not permit diesel-powered equipment whose emissions exceed the standard described in paragraph 3.3.2c underground until they are brought into compliance by making the necessary adjustments".  
AP-17.1Q paragraph 5.2.g requires that individual records be submitted within 60 days of completion.

6. Description of Condition:  
Contrary to the requirements referenced above, new standards have been developed for equipment during the 500 hour maintenance instead of comparing emission readings to the standard originally established. Several exceed the initial standard without A/E approval per Spec. 01501 paragraph 3./01.S.3a.

Examples of equipment are listed as follows (not inclusive of all equipment):  
Equipment #s A01093 Tamrock Minimatic H205DB (Jumbo Drill), # 765069 Elgood Mayo (Manride), and # 72161 Brookville 15T (Locomotive) have all had new standards developed each time maintenance was performed by BSC instead of their emissions being compared to their original standard as required. The new standards greatly exceed the original standards in some areas.

Note: During the review of these records it was determined that some of the emissions test data entered on the reports is incorrect. It appears that the data entered is engine combustion efficiency in lieu of exhaust particulate as required

Some records have not been submitted in the 60-day timeframe as required by AP-17.1Q.  
Note: There is a test report referenced on the 12/21/98 Jumbo Drill Test Report that has not been located to review. This may have been caused by not submitting the records in the required time frame.

7. Initiator: Steven S Ricks  
for John S. Ricks Date 03/06/02  
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  
NONE.

11. QA Review: QAR [Signature] Date 3/19/02  
12. Response Due Date: 10 working days from issuance

13. DOQA Issuance Approval  
Printed Name Ram Murthy Signature [Signature] Date 3/20/02

22. Corrective Actions Verified: QAR [Signature] Date 12/20/02  
23. Closure Approved by: DOQA [Signature] Date 1/7/03

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2. Check if Amended

3 Extended Processing

No  Yes (If yes, submit Extended Processing request)

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DEFICIENCY REPORT/CORRECTIVE ACTION REPORT INITIAL RESPONSE

4. Immediate Actions Necessary to Bring the Process Under Control: (If none, provide justification statement)

Perform emissions testing of diesel powered equipment now in use underground at the ESF. Emission testing will be conducted to determine the emissions product average of equipment now in use underground at the ESF. The current emissions product average will be compared with the equipment's correct established emission standards to determine compliance with the requirements. Should the current product average exceed the equipment's established standard, the equipment will be placed out of service until the emissions can be brought back into compliance by mechanical adjustment or other means.

The emissions testing will also indicate extent of condition.

Date when process will meet requirements: 5/17/2002

5. Immediate Remedial Actions Completed:

1) A Work Request was completed and submitted to perform emissions testing of diesel powered equipment now in use underground at the ESF.

2) Submitted comments during revision of LP-OM-057Q, "Diesel-Powered Equipment Emissions Testing and Control Procedure" to reword paragraph 5.3b). These comments, which were accepted and incorporated, clarify emissions testing requirements and the establishment of standards for diesel powered equipment used underground at the ESF.

6. Plan for Determining the Extent of Condition:

The plan for determining the extent of condition is to perform emissions testing on diesel powered equipment now in use underground at the ESF and compare the current emissions product average with the correct developed standard. These actions will identify which equipment is not in compliance with the requirements. Should the product average exceed the established standard the equipment will be placed out of service until the emissions can be brought back into compliance by mechanical adjustment or other means. Additional work required under this plan will be to research emission report records for all other diesel powered equipment used underground with in the last 24 months to determine extent of condition.

7. Due Date for Submittal of Completed Response:

5/17/2002

8. Response by: (Responsible Manager)

C.M. SPARKS C.M. Sparks 4/2/02  
Printed Name Signature Date

9. QAR Evaluation:  Accept  Partially Accept  Reject

JOHN R. DOYLE John R. Doyle 4/3/02  
Printed Name Signature Date

10. QAM Concurrence:

RAM MURPHY James Blaylock for 4/5/02  
Printed Name Signature Date

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REQUEST FOR EXTENDED PROCESSING

3. Extended Actions: (Identify those corrective actions planned for completion beyond 100 days from issuance of the DR/CAR)

Actions planned for completion beyond 100 days from the issuance of this DR are:

1. The completion and submission of a Completed Response and actions determined therein. Actions identified to date for inclusion in the Completed Response are listed below.
  - a. The completion of revisions to D.I.E.s (BAB000000-01717-2200-00005 & BABEAF000-01717-6300-00011)
  - b. Revision of Specification 01501 to reflect the changes to the D.I.E.s.
  - c. Review of the Stationary Diesel Emission Test Reports for all equipment in use to determine if the original baseline equipment has been exceeded. See continuation page for Block 3 continuation.

Expected Completion Date: 10/01/2002

4. Justification: (Provide an explanation as to why the required actions cannot be completed within 100 days)

Extended processing is required because of the wide scope of the DR spanning three consecutive constructor's activities, the complex nature of the subject, the time required to resolve issues associated with additional conditions identified, and the impacts of the Safety Stand Down at the site beginning 4/28/2002. Further investigation into the extent of condition for this deficiency identified problems beyond the scope initially envisioned. It was necessary to reach resolution/consensus regarding the inability or lack of measurement of diesel particulate matter (DPM) for underground equipment. A considerable amount of time was lost determining the path forward on these issues by all the parties affected as well as obtaining Performance Assessment review and recommendation. These activities consumed the majority of the normal processing time frame.

See continuation page for Block 4 continuation.

5. Impact: (Provide an impact statement to indicate what affect not completing within 100 days will have relative to waste isolation and safety, and impact to other work, if any)

Not completing the actions committed to under this deficiency within the 100 day Normal Processing time frame will not have an impact to Waste Isolation and Safety or impact Quality. This is based on the fact that this issue has been reviewed and addressed by Engineering, Safety Assurance and Performance Assessment and no impacts were identified. In fact, Performance Assessment's recommendation is that in lieu of monitoring underground diesel equipment emission rates in the ESF and ECRB by quantifying Diesel Particulate Matter (DPM) in the exhaust stream, as is currently required by the DIE, diesel emissions could more accurately be evaluated by implementation of a tunnel sampling program

Approvals *See QA PL 6/26/02*

6 Responsible Manager:  
James Hayes *[Signature]* 6/26/02  
Printed Name Signature Date

7. Senior Manager:  
Nancy Williams *[Signature]* 6/27/02  
Printed Name Signature Date

8. DOE Project Management:  
*[Signature]* 7/2/02  
Printed Name Signature Date

9 DOQA  
*[Signature]* 7/3/02  
Printed Name Signature Date

10. Director, OCRWM: (required for scheduled completion dates one year or more from initial issue)

N/A N/A  
Printed Name Signature Date

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**CONDITION ADVERSE TO QUALITY CONTINUATION PAGE**

Continuation Block 3:

Equipment that exceeds the baseline will be brought into compliance in accordance with LP-OM-057Q-BSC or actions determined under this DR.

d. Revision of LP-OM-057Q-BSC to reflect the change to Specification 01501.

e. Investigate and evaluate the failure to submit records within the established time frame.

f. Additional actions identified during development of the Completed Response Required to resolve this DR.

Continuation Block 4:

The actions required to complete the anticipated remedial actions and action to prevent recurrence related to the DPM issues for the most part cannot be completed concurrently and each item has a time frame in the range of 30 days.

Additionally, once the DPM issue was resolved and the investigation returned to the condition regarding emissions exceeding established standards, it was found that these issues are as complex as the DPM issue.

Initial comparison of emission standards for one piece of equipment reveals test results with erratic ranges bringing into question validity of all testing and requiring addition time and effort to research every record for underground equipment to establish the extent of condition and the path forward. This effort will require additional effort by Engineering and Safety Assurance to re-evaluate allowable emission limits as currently established by Specification.

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2. Check if Amended   
 Check if also Initial Response
3. Extended Processing  
 No  Yes (If yes, submit Extended Processing request) *10/10/02*

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**DEFICIENCY REPORT/CORRECTIVE ACTION REPORT COMPLETE RESPONSE**

4. Extent of Condition: (Amended response will be required if all Extent of Condition investigations are not complete and documented herein)

Investigation of the condition identified in Block 6 of the Deficiency Report regarding re-establishment of emissions standards was found to exist for all equipment currently in use at the ESF. This condition exists from the time of transition from the Constructor to the M&O Contractor (10/98) to present. Review of the Stationary Diesel Emissions Test Reports indicate only one locomotive (72161) in use does not exceed its original emissions baseline. In addition, it was discovered that the equipment used for emissions testing is not capable of measuring diesel particulate matter (DPM) and all measurements reported as DPM were in fact combustion efficiency and prior to 10/98 what was reported is undetermined.

The record identified in Block 6 is missing.

5. Impact: (Provide an impact statement relative to waste isolation and safety, and impact to other work, if any)

There is no impact to waste isolation and safety or impact to other work based on an early assessment made of these activities under RFC 96-020 which states "...Emissions testing described under this paragraph is part of the equipment maintenance program aimed at identifying equipment degradation in order to minimize exhaust emissions and is not conducted to provide data for design or site characterization..." and recent discussion between Safety Assurance (SA), Performance Assessment (PA), the Architect/Engineer (A/E). The outcome of these discussion is PA's recommendation that in lieu of monitoring underground diesel emissions rates in the ESF and ECRB by quantifying DPM in the exhaust stream, as currently required by the D.I.E., diesel emissions could more accurately be evaluated by implementation of a tunnel sampling program.

6. Remedial Actions: (Document all actions necessary to address the results of the Extent of Condition)

1. Supplement the appropriate records packages to identify the reported DPM data on the Stationary Diesel Emission Test Reports as suspect from the introduction of diesel equipment into the ESF through 10/98 because the test method is unidentified and from 10/98 to present as incorrect data because combustion efficiency was reported instead of DPM.
2. Review Stationary Diesel Emission Reports for all equipment in use (action completed) and determine appropriate course of action for each engine and evaluate revision of the current allowance to exceed the base line by 125 % for each gas species and revise Specification BAB000000-01717- 2100-01501 as required.
3. Identify the Stationary Diesel Emissions Test Report, dated 12/21/98, as missing in The Tamrock Drill record package.

7.  Root Cause (For a significant CAQ, attach results of formal root cause determination prepared in accordance with AP-16 4Q)

Apparent Cause

The apparent cause of this deficiency is the failure to adequately relay requirements through specifications/procedures. This is evidenced by occurrence of re-establishment of emissions standards soon after the transition from the Constructor to the M&O Contractor when new personnel became responsible for testing the equipment. Specification BAB000000-01717-2100-01501, Paragraph 3.01 S3a can be interpreted that a new base line be established after tune up in accordance with manufactures' recommendations. This was not clarified until February 2002 by RFC 02/006 prior to issuance of this deficiency.

Additionally, AP-17.1Q requirements were removed from NWI-ESF-021Q by EICN 1 02/22/99.

8. Action to Preclude Recurrence: (Address those actions necessary to prevent the identified cause from recurring)

1. Revise the D.I.E.s (BAB000000-01717-2200-00011 (action completed) and BABEAF000-01717-2100-00005) to reflect the PA assessment regarding DPM emission measurements.
2. Revise Specification BAB000000-01717-2100-01501 to reflect the D I E. requirements
3. Revise LP-OM-057Q-BSC to reflect the new Specification requirements

9. Due Date for Completion of Corrective Action:  
 12/17/2002

10. Responsible Manager: *BSC QA POC 10/10/02*  
 James Hayes *[Signature]* *10/21/02*  
 Printed Name Signature Date

11. QAR Evaluation:  Accept  Partially Accept  Reject  
 Re-evaluated for significance

12. QAM Concurrence:

*DOYLE JOHN* *[Signature]* *10/14/02*  
 Printed Name Signature Date

*Dennis Brown* *[Signature]* *10/13/02*  
 Printed Name Signature Date



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**REQUEST FOR EXTENDED PROCESSING**

3. Extended Actions. (Identify those corrective actions planned for completion beyond 100 days from issuance of the DR/CAR)

Actions planned for completion beyond 100 days from the issuance of this DR are:

- a. The completion of revisions to D.I.E.s BAB000000-01717-2200-00005.
- b. Review Stationary Diesel Emissions Test Reports for all equipment in use and determine appropriate course of action for each engine and evaluate revision of the current allowance to exceed the base line by 125 % for each gas species, and revise Specification BAB000000-01717-6300-01501 accordingly.
- c. Revision of Specification BAB000000-01717-2100-01501 to reflect the changes to the D.I.E.
- d. Revise LP-OM-057Q-BSC to reflect Specification BAB000000-01717-2100-01501 revisions.

Expected Completion Date: 12/17/2002

4. Justification: (Provide an explanation as to why the required actions cannot be completed within 100 days)

Additional extended processing is required because difficulties encountered during the revision of the Determination of Importance Evaluation for the Subsurface Exploratory Studies Facility (BAB000000-01717-2200-00005) and the nature of the follow on revisions to Specification BAB000000-01717-2100-01501 and LP-OM-057Q-BSC which for the most part can not be completed concurrently and each revision has a time frame of no less than 30 days. These activities are scheduled under closure for NCR 02-0057, see attached schedule.

5. Impact: (Provide an impact statement to indicate what affect not completing within 100 days will have relative to waste isolation and safety, and impact to other work, if any)

Not completing the actions committed to under this deficiency within the 100 day Normal Processing time frame will not have an impact to Waste Isolation and Safety or impact Quality. This is based on the fact that this issue has been reviewed and addressed by Engineering, Safety Assurance and Performance Assessment and no impacts were identified. In fact, Performance Assessment's recommendation is that in lieu of monitoring underground diesel equipment emission rates in the ESF and ECRB by quantifying Diesel Particulate Matter (DPM) in the exhaust stream, as is currently required by the DIE, diesel emissions could more accurately be evaluated by implementation of a tunnel sampling program

**Approvals** *BSCQA POC 12/12/02*

6 Responsible Manager:  
James Hayes *[Signature]* 10/2/02  
Printed Name Signature Date

7. Senior Manager:  
*SEE CONTINUATION PAGE 252*  
Nancy Williams *[Signature]* 10/5/02  
Printed Name Signature Date

8 DOE Project Management:  
N/A  
Printed Name Signature Date

9. DOQA:  
N/A  
Printed Name Signature Date

10. Director, OCRWM. (required for scheduled completion dates one year or more from initial issue)  
N/A  
Printed Name Signature Date



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BSC SR Management has decided not to approve this Request for Extended Processing. This Request for Extended Processing represented the second such request for this DR. It is felt that by not granting extended processing a second time and carrying this DR as a late action item, this DR will receive an increase in attention that will result in its closure in a more timely manner. Weekly status reports will be provided to the QAM per AP-16.1Q par 5.11.1.

 10/2/02  
Russ Fray

BSC Projects - Deputy Manager

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**CONDITION ADVERSE TO QUALITY CONTINUATION PAGE**

**Verification of Committed Corrective Actions to Deficiency Report BSC-02-D-086**

**Block 4. Extent of Condition:**

See Complete Response:

**Block 5. Impact:**

See Complete Response:

**Block 6 Remedial Action:**

1. Verified that Memo (See Attachment 1) has been supplemented to Stationary Diesel Emission Test Reports already captured in the Records Center. This memo also identifies that the Stationary Emissions Test Report for the Tamrock Drill dtd. 12/21/98 is missing
2. Verified that a review was performed of Stationary Diesel Emission Test Reports to determine the appropriate course of action. (See Matrix Review Results, Attachment 2). Said review resulted in reevaluation of and revision to specification BAB000000-01717-6300-01501 REV 07 "Subsurface General Construction" sections 3.01 S and 3.01 U. These requirement now reflect the present process that meets OSHA 29CFR 1926.55 requirements. (Note: The Complete Response to this DR called out a revision to specification BAB000000-01717-2100-01501, this is a typo, there is no specification with that number. The correct designation is BAB000000-01717-6300-01501.)
3. See item 1 above.

**Block 7 Root Cause**

See Complete Response

**Block 17 Action to Preclude Recurrence:**

1. Verified via review of DIE BAB00000-01717-2200-00011 "Determination of Importance Evaluation REV 03 ICN 2 section 11.3.3 and BABEAF000-01717-2200-0005 "Determination of Importance Evaluation for the Subsurface Exploratory Studies Facility" REV 07 ICN 04 section 13.2.25.(Note: The Complete Response references BABEAF000-010717 2100-0005, there is a typo in the response, the actual number is 2200 instead of 2100.)
2. Verified revised specification BAB000000-01717-6300-01501 REV 07 sections 3.01 S and U .
3. Verified that LP-OM-057Q-BSC "Diesel-Powered Equipment Emissions Testing and Control Procedure" Revision 1 ICN 0 has been revised to reflect requirements of the newly revised BAB000000-01717-6300-01501.

The Above Committed Corrective Actions have been satisfactorily verified.

This Deficiency Report is considered closed.

QAR: John R. Doyle

Date 12/20/02

John R. Doyle





ATTACHMENT 1 TO DR  
BSC-02-D-086

p2of2

# Happy Holidays

From: Linda Mantor on 12/17/2002 06:46 AM

Sent by: Linda Mantor

To: Patty Jakus/YM/RWDOE@CRWMS

cc:

Subject: MOL.20021216 0115 -- fast number -- DEFICIENCY REPORT (DR), BSC-02-D-086 Correspondence log #1212025434:

User Filed as: Excl/AdminMgmt-14-4/QA N/A

Here is the fast number you requested for Correspondence log #1212025434: MOL.20021216.0115

Have a great day.

**Linda**

Stationary Diesel Engine Emissions Test Comparison:

	Equipment Description	Equip No.	Test Date	NOx	Standard	SO2	Standard	CO	Standard	CO2	Standard
SD 2001	Elgood Mayo	765069	1/29/2002	178.6	30.75	0.0	0.0	231.4	188.5	23	3.15
1.7.00	Tamrock Jumbo	A10193			196		0		109.5		5.38
1.18.01	Brookville Locomotive	72161	8/20/2002	106.4	178.75	0.0	0.0	22.6	43	1.0	2.0
5.24.00	Brookville Locomotive	72160	1/29/2002	124.8	80.5	0.0	0.0	18.0	88.0	0.9	0.8
9.27.00	Plymouth Locomotive	A72158	8/15/2002	61.4	30.75	0.0	0.0	20.8	188.5	0.9	3.15
3.23.01	Plymouth Locomotive	A72157	6/25/2002	93.6	31.0	0.0	0.0	20.0	47.0	0.8	0.55

ATTACHMENT 2 TO  
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