



Department of Energy

Yucca Mountain Project Office

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WBS 1.2.9.3

QA

JUN 05 1990

Leslie J. Jardine
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ISSUANCE OF STANDARD DEFICIENCY REPORTS (SDRs) 536 THROUGH 541 AND 544, REVISIONS 0, RESULTING FROM YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) QUALITY ASSURANCE (QA) AUDIT 90-02 OF LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL) NN1-1990-3425)

Enclosed are SDRs 536 through 541 and 544, Revisions 0, generated as a result of Project Office QA Audit 90-02 of LLNL.

Please identify the corrective actions to be taken and implemented to correct the deficiencies by completing Blocks 14 through 18, as appropriate, on each SDR.

Responses to the SDRs are due within 20 working days of the date of this letter. Any extension to these due dates must be requested in writing with appropriate justification prior to the due date. Please send the original of your responses to Nita J. Brogan, Science Applications International Corporation, 101 Convention Center Drive, Las Vegas, Nevada 89109, and a copy to Ralph W. Gray, U.S. Department of Energy, P.O. Box 98518, Las Vegas, Nevada 89193.

Your cooperation and timely response is appreciated. If you have any questions, please contact either James Blaylock at (702) 794-7913 or FTS 544-7913 or Gerard Heaney at (702) 794-7749 or FTS 544-7749 of the Yucca Mountain Project QA staff.

James Blaylock
Donald G. Horton, Director
Quality Assurance
Yucca Mountain Project Office

YMP:JB-3534

Enclosures:
SDRs 536 through 541 and 544

9006180115 900605
PDR WASTE PDC
WM-11

ADD: K Hooks

102.7
WM-11
NH03

YMPO STANDARD DEFICIENCY REPORT

N-QA-038
4/89

Completed by Originating QA Organization	1 Date May 18, 1990		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2	
	3 Discovered During YMP Audit 90-02		3a Identified By R. Maudlin		4 SDR No. 536 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted J. Blink, D.Short		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) Project Procedure AP-5.13Q "Readiness Review" Rev. 0, para. 4.5 states in part: "The Board approves the completed checklist and the Review Record Memorandum."					
Completed by Organization in Block 5	9 Deficiency Contrary to the above, for several readiness review files reviewed during the audit:					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Issue a memo to the appropriate readiness review files acknowledging this SDR.					
	11 QAE/Lead Auditor/Date <i>Gerard Heaney 5-23-90</i>		12 Division Manager/Date <i>N/A</i>		13 Project Quality Mgr./Date <i>5-29-90</i>	
Completed by Organization in Block 5	14 Remedial/Investigative Action(s)					15 Effective Date
	16 Cause of the Condition & Corrective Action to Prevent Recurrence					17 Effective Date
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date		Division Manager/Date	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date		Division Manager/Date	
	21 Remarks					
	22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date	
						PQM/Date

ENCLOSURE

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8 Requirement (continued)

AP-5.13Q Rev. 0, para. 5.2.1 states in part: "The Readiness Review Board Chairperson performs the following:

1. Determines the technical disciplines to be used to accomplish the scope and purpose of the review.
2. Establishes minimum qualifications (e.g., education, experience and independence) needed by Review Board members to provide the technical disciplines to accomplish the scope and purpose of the review.

(Refer to audit checklist item no. 3-8)

9 Deficiency (continued)

1. No objective evidence could be provided to reflect approval of the Review Record Memorandum by the Readiness Review Board.
2. No objective evidence could be provided to identify that the Readiness Review Board Chairperson: a) made a determination of the technical disciplines to be used; and b) established the minimum qualifications needed by Readiness Review Board members for technical disciplines to be used.

10 Recommended Actions (continued)

2. Establish and document the technical disciplines to be used to accomplish the scope and purpose of the review.
3. Establish and document the qualifications (education, experience, and independence) needed by Review Board Members.
4. Review the qualifications of the personnel who performed readiness reviews to ensure adequacy for each specific readiness review performed. Annotate each file accordingly.
5. Evaluate the impact on quality as a result of this SDR.

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	3 Discovered During YMP Audit 90-02		3a Identified By A. Areco R. Maudlin		4 SDR No. 537 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted W. L. Clark, B. Bryan		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) PART A LLNL Procedure 033-YMP-QP 2.1 "Preparation, Approval and Revision of Quality Procedures and Requirements", Rev. 1, para. 2.1.4.3 states in part:					
	9 Deficiency PARTS A & B There was no objective evidence available during the audit to assure the that the review process described in QP 2.1 or the LLNL QAPP was followed as					
Completed by Organization in Block 5	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective PARTS A & B 1. Issue a memo to the appropriate document review files acknowledging this					
	11 QAE/Lead Auditor/Date <i>Gerald Heaney 5-23-90</i>		12 Division Manager/Date <i>N/A</i>		13 Project Quality Mgr./Date <i>Catherine H. [Signature] 5-29-90</i>	
	14 Remedial/Investigative Action(s)					15 Effective Date _____
	16 Cause of the Condition & Corrective Action to Prevent Recurrence					17 Effective Date _____
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date		Division Manager/Date	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date		Division Manager/Date	
	21 Remarks					
	22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date	
				PQM/Date		

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8 Requirement (continued)

1. "Review copies are distributed by the originator for review as identified in Exhibit A."
2. "Review copies are accompanied by a memo identifying the comments due date, clarifying information and any special instructions."
3. "The originator prepares a package of review copy pages with major comments and submits the memo and the package to the Local Records Center with the Records Transmittal."

LLNL Procedure 033-YMP-QP 17.0 "Quality Assurance Records", Rev. 1, para. 17.0.5.2 states in part: "When an activity has been completed, the Task Leader will collect and transmit to the LRC records generated by that activity not previously submitted."
(Refer to audit checklist item nos. 5-2 and 17-1)

PART B

The LLNL QAPP 033-YMP-R 3, Rev. 0, para. 1.3.1 states in part: "The LLNL-YMP conducts a technical review of the scientific investigation planning document.... The results of this technical review, and the resolution of any comments by the reviewer or reviewers, are documented, and become a part of the QA records.

(Refer to audit checklist item no. 3-11)

9 Deficiency (continued)

evidenced by the lack of document review packages at the LRC for the documents listed below:

Document	Revision	Approval Date	Issue Date
TIP-CM-01	0	10/09/89	10/09/89
TIP-CM-02	0	10/17/89	10/17/89
TIP-CM-03	0	10/17/89	10/17/89
TIP-CM-04	0	10/17/89	10/17/89
TIP-CM-05	0	12/21/89	01/22/90
TIP-CM-06	0	01/17/90	01/22/90
TIP-CM-07	0	01/26/90	01/26/90
SIP for Spent Fuel			
Waste Form Testing	0.5	05/23/89	

10 Recommended Actions (continued)

SDR.

2. Instruct appropriate personnel to procedural requirements identified in this SDR.
3. Review to ensure that the appropriate review was performed although a review package might not exist for the reviews performed.
4. Determine the impact on quality due to the SDR.

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Completed by Originating QA Organization	1 Date May 18, 1990		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2	
	3 Discovered During YMP Audit 90-02		3a Identified By S. Crawford		4 SDR No. 538 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted W. Clark, R. McCright		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) The LLNL QAPP, section 033-YMP-R Appendix A, Rev. 0 defines "Service" as "The performance of activities that include but are not limited to site characterization, design, fabrication, investigation, inspection,					
Completed by Organization in Block 5	9 Deficiency Candidate waste package container material test coupons were machined by Metcut Research Associates Inc. under LLNL purchase order nos. B108259, B108294, and B109028. These purchase orders were issued as "Commercial					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Identify other purchase orders issued to Metcut for machining test coupons and material samples which have similar deficiencies.					
	11 QAE/Lead Auditor/Date <i>Gerard Heaney 5-23-90</i>		12 Division Manager/Date <i>N/A</i>		13 Project Quality Mgr./Date <i>Catherine [Signature] 5-29-90</i>	
Completed by Organization in Block 5	14 Remedial/Investigative Action(s)				15 Effective Date _____	
	16 Cause of the Condition & Corrective Action to Prevent Recurrence				17 Effective Date _____	
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date		Division Manager/Date	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date		Division Manager/Date	
	21 Remarks					
	22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date	
				PQM/Date		

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8 Requirement (continued)

nondestructive examination, repair, or installation."
(Refer to audit checklist item no. 3-13, 3-14, and 3-15)

9 Deficiency (continued)

Grade Items" without addressing quality assurance requirements in the purchase order. LLNL provided the material used to fabricate the test coupons. The purchase order should have been issued as a "service" procurement with an assigned quality level commensurate with the LLNL assigned QA Level II for the activity (E-20-18) related to the material tests. The data obtained from this activity will be used as direct input for the metal barrier selection activity (E-20-19) which is assigned QA Level I.

In addition, Metcut Research Associates Inc. was not on the LLNL Qualified Supplier List.

10 Recommended Actions (continued)

2. Investigate to determine if the issuance of the purchase orders to Metcut without the inclusion of QA requirements has any adverse impact on the test coupons supplied to LLNL.
3. Perform the actions necessary to place Metcut on the Qualified Supplier List if Metcut is to perform similar services in the future.
4. Train appropriate personnel to requirements.

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	3 Discovered During YMP Audit 90-02		3a Identified By S. Crawford		4 SDR No. 539 Rev. 0
	5 Organization LLNL		6 Person(s) Contacted W. Clark, R. McCright		7 Response Due Date is 20 Working Days from Date of Transmittal
	8 Requirement (Audit Checklist Reference, if Applicable) LLNL Procedure 033-YMP-QP 4.0 "Procurement Control and Documentation", Rev. 1, para. 4.0.5.7.4 states "For all QA Level I and II procurement actions (whether sole source, subject to bid, or handled by SANL memorandum) the QA Manager				
	9 Deficiency LLNL purchase orders B108259, B108294, and B109028 were issued to Metcut Research Associates Inc. with numerous differences in requirements from the related purchase requisitions 336608, 336613, and 336610 respectively. The				
Completed by Organization in Block 5	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Identify other purchases issued to Metcut which have similar deficiencies.				
	11 QAE/Lead Auditor/Date <i>Gerard Heaney</i> 5-23-90		12 Division Manager/Date N/A		13 Project Quality Mgr./Date <i>Allen Thompson</i> 5-29-90
	14 Remedial/Investigative Action(s)				
	15 Effective Date _____				
	16 Cause of the Condition & Corrective Action to Prevent Recurrence				
Comp. by Orig. QA Org.	17 Effective Date _____				
	18 Signature/Date				
	19 Response Accepted	QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	20 Corrective Action Verif. Satisfactory	QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	21 Remarks				
22 QA CLOSURE					
QAE/Lead Auditor/Date		Division Manager/Date		PQM/Date	

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8 Requirement (continued)

(or his designee) reviews the final procurement documents prior to release to assure consistency with the initial procurement memorandum request. This review is documented on the notification form and is retained in the Resource Manager's files.

(Refer to audit checklist item no. 3-15)

9 Deficiency (continued)

purchase orders were issued 11/7/89; however, objective evidence provided during the audit indicates the purchase requisitions to be reviewed by the QA Manager 12/15/89.

Examples of differences include:

1. Purchase requisitions provide for machining to be in accordance with the Metcut QA Program; the purchase orders do not include this requirement.
2. Purchase requisitions provide specific labeling instructions for coupon identification; identification requirements are not included in the purchase orders.
3. Purchase requisition 336608 required fatigue precracking at 1-2 Hz using a triangular load waveform; purchase order B108259 requires precracking at 30 Hz using sinnoidal waveform.
4. The purchase orders identify the material as LLNL supplied; the purchase requisitions do not identify the source of the material.

10 Recommended Actions (continued)

2. Investigate to determine if the differences between the purchase orders and the purchase requisitions has adverse effect on the products delivered.
3. Retrain appropriate personnel to procedural requirements.

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	3 Discovered During YMP Audit 90-02		3a Identified By S. Crawford		4 SDR No. 540 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted D. Short, J. Blink		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) The LLNL QAPP, Section 033-YMP-R 3, Rev. 0, para. 1.1.2 states in part: "Scientific planning documents consist of Scientific Investigation Plans for all other activities (other than site characterization activities).					
Completed by Organization in Block 5	9 Deficiency The Scientific Investigation Plan for Metal Barrier Selection and Testing, Rev. 0 (WBS 1.2.2.3.2); Activity Plans for sub-activities E-20-15, E-20-18a, E-20-18c, E-20-18d; and related Technical Implementing Procedures were not					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Review and revise all Scientific Investigation Plans, Activity Plans, and Technical Implementing Procedures for the Metal Barrier Activity					
	11 QAE/Lead Auditor/Date <i>Gerard Heaney 5-23-90</i>		12 Division Manager/Date <i>N/A</i>		13 Project Quality Mgr./Date <i>5-29-90</i>	
Completed by Organization in Block 5	14 Remedial/Investigative Action(s)					15 Effective Date _____
	16 Cause of the Condition & Corrective Action to Prevent Recurrence					17 Effective Date _____
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	21 Remarks					
	22 QA CLOSURE	QAE/Lead Auditor/Date	Division Manager/Date	PQM/Date		

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8 Requirement (continued)

These documents also identify additional planning documents called Activity Plans which are prepared for each activity or a combination of activities. Activity Plans provide the sequence and details of how the work is performed and how applicable QA procedures are implemented."

(Refer to audit checklist item no. 3-14)

9 Deficiency (continued)

fully consistent for experiment requirements and quality assurance levels. In addition, the planning documents and technical procedures did not reflect current plans for the investigation, although readiness reviews had been conducted and the activities had been authorized to restart.

Examples include:

1. Candidate materials identified by the SIP for "Metal Barrier Selection and Testing" (WBS 1.2.2.3.2) Rev. 0, TIP-CM-1 Rev. 0, and TIP-CM-5 Rev. 0 include alloys CDA 102 copper and CDA 613 aluminum-bronze. The actual alloys used to fabricate test coupons for plane-strain fracture toughness (Activity E-20-18c) and threshold stress intensity for stress corrosion cracking (Activity E-20-18d) are CDA 122 and CDA 614. Although the substituted alloys are closely related, the technical basis and justification for deviating from the designated candidate materials should be documented at the SIP or Activity Plan Level.
2. Activity Plan E-20-18c as amended by Change Notice E-20-18c-0-1 included material tests (J1c). These tests are not detailed in TIP-CM-1, which is the applicable TIP for the activity. TIP-CM-1 provides details for performing material tests (K1c) which, although described in Activity Plan E-20-18c, are not intended to be performed. The test coupon configuration shown in TIP-CM-1, Figure 7, is for K1c tests and is not the same test coupon configuration to be actually used for the J1c tests.
3. Activity Plans E-20-18c and E-20-18d identify the fracture toughness and threshold stress intensity tests as QA Level II. The attached statement of work (Appendix II) for subcontracted services identifies Task 3 as QA Level I. Although this discrepancy is no longer a concern because the subcontractor assigned to perform the work will no longer be used, Readiness Reviews RR005 and RR006 had identified the discrepancy and the resolution was that the activity plan has been modified to incorporate this change. The activity plan was not corrected.

10 Recommended Actions (continued)

to ensure consistency and accurate reflection of the technical work to be performed.

2. Investigate to determine if the inconsistencies have had an adverse impact to the quality of the work performed.

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Completed by Originating QA Organization	1 Date May 18, 1990		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2	
	3 Discovered During YMP Audit 90-02		3a Identified By M. Diaz		4 SDR No. 541 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted D. Short		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) The LLNL QAPP Section 033-YMP-R 18, Rev. 0, para. 1.0 states in part: "All deficiencies, nonconformances, and potential quality problems identified during the audit are documented and monitored until verification of effective					
Completed by Originating QA Organization	9 Deficiency Contrary to the above requirements, LLNL Procedures 033-YMP-QP 18.0 "Audits", Rev. 0 and 033-YMP-QP 18.1 "Surveillances", Rev. 1 did not require observations that were generated as a result of audits and surveillances					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Perform a review to establish how many audit and surveillance generated observations have been issued to date. Establish which of those have					
	11 QAE/Lead Auditor/Date <i>Edward Healey</i> 5-23-90					
Completed by Organization in Block 5	12 Division Manager/Date N/A		13 Project Quality Mgr./Date <i>Catherine Longford</i> 5-29-90			
	14 Remedial/Investigative Action(s)					15 Effective Date _____
	16 Cause of the Condition & Corrective Action to Prevent Recurrence					17 Effective Date _____
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date		Division Manager/Date	
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	21 Remarks					
Comp. by Orig. QA Org.	22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date	
					PQM/Date	

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8 Requirement (continued)

corrective action is made."

Para. 2.0 of the same QAPP Section states in part: "All deficiencies, nonconformances, and potential quality problems identified during surveillances are documented and monitored until verification of effective corrective action is made.

(Refer to audit checklist item no. 18-4-1)

9 Deficiency (continued)

to be monitored until verification of effective corrective action was made.

Note: During the course of the audit, LLNL revised the procedures to incorporate the above listed requirements (Refer to Change Notice No. 18.0-1-1 issued to QP 18.0 "Audits", Rev. 0 and Change Notice No. 18.1-1-2 issued to QP 18.1 "Surveillances" Rev. 1). However, this SDR is being issued to accomplish remedial and investigative action as there have been over 75 observations issued to date. LLNL has not documented the monitoring or follow-up of all of these observations.

10 Recommended Actions (continued)

had documented follow-up (i.e., have been recorded onto surveillance or audit checklists).

2. Perform follow-up to those observations which have not yet had documented follow-up (i.e., perform a documented surveillance).
3. Train appropriate personnel to revised procedural requirements.

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	3 Discovered During YMP Audit 90-02		3a Identified By M. Diaz		4 SDR No. 544 Rev. 0	
	5 Organization LLNL		6 Person(s) Contacted D. Short, E. DeLeon		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) The LLNL QAPP, Section 033-YMP-R 16, Rev. 0, para. 1.1 states in part: "Upon discovering or receiving notification that a significant condition adverse to quality or an unusual occurrence exists, the LLNL-YMP assures that immediate					
Completed by Organization in Block 5	9 Deficiency Contrary to the above, A) LLNL implementing procedure 033-YMP-QP 15.0 "Nonconforming Items, Procedural Nonconformances and Conditions Adverse to Quality", Rev. 0, does					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Revise LLNL Procedure QP 15.0 to include time limits for the evaluation of an NCR from its date of discovery.					
	11 QAE/Lead Auditor/Date <i>Gerard Heaney</i> 5-30-90		12 Division Manager/Date N/A		13 Project Quality Mgr./Date <i>Catherine...</i> 5-31-90	
	14 Remedial/Investigative Action(s) <div style="text-align: right;">15 Effective Date _____</div>					
Completed by Org. QA Org.	16 Cause of the Condition & Corrective Action to Prevent Recurrence <div style="text-align: right;">17 Effective Date _____</div>					
	18 Signature/Date					
	19 Response Accepted QAE/Lead Auditor/Date Division Manager/Date Project Quality Mgr./Date 20 Corrective Action Verif. Satisfactory QAE/Lead Auditor/Date Division Manager/Date Project Quality Mgr./Date					
21 Remarks						
22 QA CLOSURE QAE/Lead Auditor/Date Division Manager/Date PQM/Date						

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8 Requirement (continued)

actions are taken to remedy the specific conditions."

In addition, the LLNL QAPP, Section 033-YMP-R 5, Rev. 0, states in part:
"....These documents (instructions, procedures) include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities are satisfactorily accomplished."

(Refer to audit checklist item no. 16-1)

9 Deficiency (continued)

not contain qualitative or quantitative criteria establishing the time limits from the origination of a nonconformance report to the evaluation of the nonconformance report for determination if the identified deficiency is minor or serious, or a significant condition adverse to quality exists (therefore requiring the issuance of a Corrective Action Report per QP 16.0).

B) LLNL implementing procedure 033-YMP-QP 16.0 "Corrective Action", Rev. 1, does not contain qualitative or quantitative criteria establishing the time limits for the QA Manager to complete Part 1 of the Corrective Action Report from initiation to distribution.

10 Recommended Actions (continued)

2. Revise LLNL Procedure QP 16.0 to include time limits for the QA Manager to complete Part 1 of the CAR from discovery to distribution.

3. Train appropriate personnel to revised procedures.

Leslie J. Jardine

-2-

JUN 06 1990

cc w/encls:

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D. E. Shelor, HQ (RW-3) FORS
F. L. Ramirez, SAN
K. R. Hooks, NRC, Washington, DC
D. W. Short, LLNL, Livermore, CA
N. J. Brogan, SAIC, Las Vegas, NV, 517/T-08
J. E. Clark, SAIC, Las Vegas, NV, 517/T-12
S. R. Dippner, SAIC, Las Vegas, NV, 517/T-08
Gerard Heaney, SAIC, Las Vegas, NV, 517/T-06
S. W. Zimmerman, NWPO, Carson City, NV

cc w/o encls:

J. W. Gilray, NRC, Las Vegas, NV