

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION**

**QUALITY ASSURANCE SURVEILLANCE REPORT**

**OF**

**LAWRENCE LIVERMORE NATIONAL LABORATORY**

**QUALITY ASSURANCE INTERNAL GRADING PROCESS**

**SURVEILLANCE NO. YMP-SR-92-028 CONDUCTED**

**SEPTEMBER 29 THROUGH OCTOBER 1, 8, AND 9, 1992**

**ACTIVITY SURVEILLED:**

**PREPARATION, REVIEW AND APPROVAL OF  
LAWRENCE LIVERMORE NATIONAL LABORATORY  
INTERNAL QUALITY ASSURANCE GRADING REPORTS**

Prepared by:

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Date: 11-17-92

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## 1.0 EXECUTIVE SUMMARY

The surveillance of the implementation of the Quality Assurance (QA) grading process was conducted at Lawrence Livermore National Laboratory (LLNL), Livermore, California, on September 29 through October 1, 1992 and in Las Vegas, Nevada on October 8 and 9, 1992. The objective of the surveillance was to verify compliance to the Yucca Mountain Site Characterization Project Office (YMPO) Administrative Procedure (AP)-5.28Q (which was applicable during the period of the grading activities) and LLNL's implementing procedure for internal grading of activities. The reason for this surveillance was to follow up on a question raised by the State of Nevada, during LLNL Audit YMP-92-21, regarding the LLNL Internal Grading Process.

The results of the surveillance required the generation of one Corrective Action Request (CAR). The condition identified in the CAR related to a LLNL Internal Grading Report which graded an activity as non-quality affecting when, based on the information described in the associated Scientific Investigation Plan (SIP), it should have been graded as quality-affecting.

Overall compliance to procedures was found to be satisfactory with the one exception noted in the above CAR. Recommendations, as a result of this surveillance, are provided in Section 6.0 of this report.

## 2.0 PURPOSE AND SCOPE

This report contains the results of the Office of Civilian Radioactive Waste Management (OCRWM) QA Surveillance No. YMP-SR-92-028 of the implementation of the LLNL QA grading process. The surveillance was conducted at LLNL, Livermore, California on September 29 through October 1, 1992 and in Las Vegas, Nevada, on October 8 and 9, 1992. The surveillance was conducted by a team from the Yucca Mountain Quality Assurance Division (YMQAD) of the Office of Quality Assurance (OQA) in accordance with OCRWM Quality Assurance Administrative Procedure QAAP 18.3, Revision 3, "Surveillance Program."

The surveillance was intended to examine implementation of the LLNL QA grading process as described in procedure 033-YMP-QP 2.8, Revision 2, and AP-5.28Q, Revision 2, Interim Change Notice No. 1. As of the date of the surveillance, AP-5.28Q has been replaced by AP-6.17Q. However, preparation of all the LLNL internal grading was performed while AP-5.28Q was in effect. Subsequently, AP-5.28Q is being used as a requirements document during this surveillance. In addition, technical evaluations were performed to assess the activity in terms of its relationship to being a quality-affecting activity versus a non-quality affecting activity.

### **3.0 SURVEILLANCE TEAM**

**This surveillance was performed by the following personnel:**

**R. L. Maudlin, Quality Assurance Specialist, Surveillance Team Leader, YMQAD**

**W. R. Jacobs, Engineer II, Former Quality Review Board (QRB) Representative, Science Applications International Corporation (SAIC)**

**P. L. Cloke, Technical Specialist, SAIC**

### **4.0 PERSONNEL CONTACTED DURING THE SURVEILLANCE**

**D. W. Wolfe, Quality Assurance Manager, LLNL**

**D. Wilder, Technical Area Lead (TAL), LLNL**

**J. Blink, Deputy Technical Project Officer, LLNL**

### **5.0 SURVEILLANCE RESULTS**

**The surveillance consisted of documentation reviews and personnel interviews in order to determine procedural compliance. A sample of seven LLNL Internal Grading Reports was selected for review. They are as follows with their Work Breakdown Structure (WBS) numbers and titles:**

- L-008, Revision 0, WBS 1.2.2.2, Non-Quality**
- L-009, Revision 0, WBS 1.2.2.3.1.1, Quality Affecting**
- L-014, Revision 0, WBS 1.2.1.4.2, Non-Quality Affecting**
- L-037, Revision 0, WBS 1.2.2.3.1.1, Non-Quality**
- L-042, Revision 0, WBS 1.2.1.4.2, Non-Quality**
- L-043, Revision 0, WBS 1.2.1.4.2, Non-Quality**
- L-047, Revision 0, WBS 1.2.2.3.4.1, Non-Quality**

**The above grading reports were reviewed to verify that the grading had been properly documented on the forms referenced in Exhibits B, C, and D of LLNL procedure 033-YMP-QP 2.8. The grading reports were then reviewed to assure that they had been initiated by the respective Task Leader (TL). All of the grading reports identified applicability of the YMPO Q-List and Project Requirements List. Evaluations of each activity had been performed and were properly documented on Exhibit C.**

LLNL uses an internal numbering system for identifying LLNL Internal Grading Reports (i.e.; L-XXX). The grading reports also reference the specific activity number which is taken from the applicable SIP and the applicable WBS number. LLNL has developed a chart which lists the LLNL Internal Grading Report number, revision level of the grading report, the applicable WBS number, the activity number, the applicable SIP, the responsible TAL/TL, status of quality/non-quality, a brief description of the task, and the issuance date.

The results of the review revealed that LLNL is satisfactorily implementing their internal procedure for grading except as follows.

In reviewing LLNL's procedure as it relates to AP-5.28Q, several concerns were noted. LLNL procedure 033-YMP-QP 2.8, Section 2.8.5.2.1 states in part: "YMPO lists should be reviewed to obtain guidance for grading; the format for the review is provided in Exhibit B.... The guidance is not binding; the determination whether an activity is quality affecting is made during the LLNL-YMP QA Grading Process." Section 2.8.5.2.2 states in part: "The final step to designating Quality Procedures to be used in controlling the activity is to determine if the activity is Quality Affecting." Such activities are subject to the full LLNL-YMP QA Program. Other activities (those that are not designated as quality-affecting) may also contribute to the license application, but in a more preliminary or peripheral manner. These other activities are usually graded to be subject to a subset of the QA program: the reduced level of QA controls increases the pace of the research but also increases the degree of licensing risk if the results are eventually used to support the license application. Exhibits B and C provide information useful in the determination of whether an activity is quality-affecting; however, there is no formula to make the determination. The TL must consider all of the information and make a judgement.

Even though the above statements are not direct violations of upper-tier requirements, they do raise questions regarding the methodology and documented trail by which these decisions are made. In addition, it was noted that the LLNL internal grading reports did not make any reference to the applicable YMPO grading report for that activity. LLNL acquired two YMPO approved grading reports from the QRB. Grading Report LLNL-QAG-008.6 was approved for the performance of non-quality activities while grading report LLNL-QAG-007.5 applies to quality-affecting activities. The concern that arose is that both these grading reports reference some of the same WBS numbers. Subsequently, if the LLNL internal grading report made reference to a WBS number, this WBS number may be listed on both the non-quality and the quality-affecting YMPO grading reports. The only way one would be able to discern which grading report was applicable would be to look at the designation made by LLNL internal evaluation. Two recommendations were made regarding the above concerns and are noted in the recommendations section of the surveillance report.

In addition to evaluation of LLNL Internal Grading Reports for procedural compliance, three non-quality affecting grading reports were selected and reviewed by an independent technical person that was knowledgeable of the specific activities that had been graded. The LLNL Internal Grading Reports selected were L-014, L-042, and L-043. The three activities, I-20-20, I-20-22 and I-20-27, related to the implementation of activities in LLNL approved SIP SIP-PA-2, Revision dated 10/17/89, titled "Scientific Investigation Plan for Waste Package Performance Assessment Activities Conceptual Design Cycle WBS 1.2.1.4.2." The activities evaluated were:

- I-20-20 Scenario Identification, Categorization and Qualification
- I-20-22 Extend Pandora 1 to 1.1
- I-20-27 Conduct Prototype Study of the Impact of Specific Unanticipated Events

The results of the technical review indicated that activities I-20-20 and I-20-27 are properly graded as non-quality; however, activity I-20-22 was judged to be quality-affecting. Activity I-20-22 in SIP-PA-2, last paragraph, states that the results of this activity will "provide a usable model on a timely basis for CD applications, ...and for use as the kernel in the source-term model development." This activity is considered to have an impact on the repository waste isolation. LLNL procedure 033-YMP-QP 2.8, Revision 2, Section 2.8.3 defines quality-affecting activities as those activities and items which are intended for use in relation to radiological health and safety or waste isolation...." CAR YM-93-017 was generated to document this condition.

**CARs Issued:**

YM-92-017: Contrary to the requirements of the LLNL 033-YMP-QP 2.8, LLNL Internal Grading Report LLNL-QAG-L042 identified activity I-20-22 as non-quality affecting; however, based on the activity identified in SIP-PA2, the activity is considered quality-affecting.

See the attached information copy of the referenced CAR (Enclosure 1).

## 6.0 RECOMMENDATIONS

The following recommendations are provided as a result of this surveillance. These recommendations are not considered conditions adverse to quality, but are areas in which it is felt that management should evaluate to assure that LLNL QA procedures are consistent with YMPO requirements for establishing applicability of QA program requirements.

1. LLNL QP 2.8, Section 2.8.5.2.1 addresses that the application of the YMPO Q-List and other lists are not binding, and that LLNL will internally make the decision as to whether an activity is quality-affecting. This is not consistent with YMPO direction. It is recommended that LLNL revise its grading procedure (QP 2.8) to be consistent with YMPO requirements in AP-6.17Q.
2. LLNL has an internal procedure (QP 2.8) for grading activities; however, there are no defined criteria to establish whether an activity is quality-affecting or non-quality affecting (Reference: QP 2.8, Section 2.8.5.2.2, last paragraph). It is recommended that LLNL revise QP 2.8 to provide criteria that are consistent with the requirements specified in AP-6.17Q.