

U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE

SUPPLIER SURVEY REPORT

OF

LAWRENCE LIVERMORE NATIONAL LABORATORY
CENTER FOR ACCELERATOR MASS SPECTROMETRY

LIVERMORE, CALIFORNIA

REPORT NUMBER OQA-SFE-96-001
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Enclosure

1.0 EXECUTIVE SUMMARY

The supplier survey of Lawrence Livermore National Laboratory - Center for Accelerator Mass Spectrometry (LLNL-CAMS) revealed inadequate conditions resulting in one recommendation to LLNL-CAMS' Quality Assurance (QA) program for the Office of Civilian Radioactive Waste Management (OCRWM) activities. The LLNL-CAMS' Geoscience Accelerator Mass Spectrometry (AMS) Radiocarbon Procedure (1995) does not fully meet the requirements of the OCRWM Quality Assurance Requirements and Description (QARD) for the following elements: Organization, QA Program, Implementing Documents, Document Control, Control of Measuring and Test Equipment, Corrective Action, QA Records, Audits, Software Control, and Sample Control. Due to the lack of detailed procedures, program effectiveness could not be determined.

The discrepancies identified during the survey were discussed with LLNL-CAMS' management who agreed to resolve the discrepancies upon receipt of the reported recommendation.

2.0 SCOPE

The supplier survey was conducted at the request of the U.S. Geological Survey (USGS) to evaluate the technical and quality capabilities of LLNL-CAMS' facility, personnel, and QA program to satisfy the requirements for the intended scope of work and appropriate OCRWM QA program requirements. The QA program elements determined to be applicable are: Organization, QA Program, Implementing Documents, Document Control, Control of Measuring and Test Equipment, Corrective Action, QA Records, Audits, Software Control, and Sample Control.

The technical areas reviewed during the survey were as follows:

- Sample Processing
- Laboratory Facilities
- Lab Equipment
- Calibration Practices
- Data Reduction
- Personnel Capabilities

3.0 AUDIT TEAM AND OBSERVERS

Richard L. Maudlin, Survey Team Leader, Office of Quality Assurance (OQA), Yucca Mountain Quality Assurance Division

John S. Stuckless, Technical Specialist, U.S. Geological Survey (USGS)

4.0 PERSONNEL CONTACTED DURING FACILITY AUDIT

Ivan Proctor, Director, LLNL-CAMS
John Southon, Chief Scientist, LLNL-CAMS
Michaele Kashgarian, Isotope Geochemist, LLNL-CAMS

5.0 SUMMARY OF AUDIT RESULTS

LLNL-CAMS' Geoscience AMS Radiocarbon Procedure (1995) does not effectively address all applicable elements of the OCRWM QARD for the intended scope of work. The program does not provide detailed implementing procedures to implement the applicable portions of the OCRWM QARD. This problem is identified and described in Section 6.0, "Recommendations." The technical evaluation revealed that processes and personnel performing the AMS analysis were satisfactory. With the resolution of the recommendation identified in Section 6.0 of this report, LLNL-CAMS' personnel, facilities, equipment, and QA Program are determined to be acceptable for providing C14 and Chlorine 36 AMS analysis.

The details of the survey, along with the objective evidence reviewed, are contained within the survey checklist which is available from the OQA's quality supplier evaluation files.

6.0 RECOMMENDATIONS

The recommendation is provided for your consideration should you desire to pursue approval of LLNL-CAMS and have them added to the OCRWM Quality Suppliers List. The recommendation will require revision and/or preparation of additional procedures to address the requirements of the QARD.

Prepare detailed implementing procedures which address the following:

1. Describe who is responsible for quality and how implementation of quality will be verified.
2. Describe the responsibilities and process for the evaluation, selection, indoctrination, training, and qualification of personnel performing AMS analysis. Describe how this will be documented.

3. Describe the process for performing AMS analysis (i.e., receipt of samples, identification, handling and loading samples, the testing process, unloading, disposition of samples, etc.). Describe critical steps to be documented. The technical procedure should contain sufficient detail so that someone familiar with AMS's work could duplicate the results in your laboratory.
4. Describe the process for preparation, review, approval, revision, and control of procedures. Include in implementing procedures: responsibilities, technical requirements, a sequential description of the work to be performed, acceptance criteria, and any prerequisites, limits, etc.
5. Describe the process for calibration of the AMS system. Include the use of standards traceable to the National Institute of Standards and Technology (NIST), calibration interval, tagging of calibrated equipment, and how calibration will be documented.
6. Describe how conditions adverse to quality will be documented and the method for verification of corrective action.
7. Describe how corrections to QA records and in-process documentation will be handled. Also identify what documentation is considered QA records and temporary storage requirements (i.e., 1-hour rated fireproof file cabinets or dual storage).
8. Describe the process for the preparation, performance, and reporting of internal audits.
9. Describe the process for software control, such as verification and configuration control. Describe how software verification activities will be documented.
10. Describe the process for sample identification and control from receipt of samples through testing and reporting. Identify documentation requirements for sample identification and control.