Department of Energy
Washington, DC 20585

QA: L

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ISSUANCE OF SURVEILLANCE RECORD LLNL-SR-97-058 RESULTING FROM THE OFFICE OF QUALITY ASSURANCE (OQA) SURVEILLANCE OF LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)

Enclosed is the Record of Surveillance LLNL-SR-97-058 conducted by the OQA of LLNL's facility in Livermore, California, August 25 through September 2, 1997.

The purpose of the surveillance was to determine if LLNL personnel are implementing appropriate controls for samples and Measuring and Test Equipment (M&TE) used in support of the Long Term Corrosion Studies (Work Breakdown Structure 1.2.2.5.1 Activity E-20-50).

Based on the results of this surveillance, indications are that LLNL personnel are effectively implementing their Quality Assurance program for the control of samples and M&TE related to the Long Term Corrosion Studies. No deficiencies were identified during the surveillance; however, recommendations related to the documentation of calibration information in the corrosion studies database were provided to LLNL personnel.

This surveillance is considered completed and closed as of the date of this letter. A response to this surveillance record is not required.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or James M. Ziemba at (510) 423-6863.

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James Blaylock for
Donald G. Horton, Director
Office of Quality Assurance

OQA:JB-0058

Enclosure:
Surveillance Record LLNL-SR-97-058

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Recap: NMSS/PAHL

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

Surveillance No. LLNL -SR-97-058

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

1. ORGANIZATION/LOCATION:	2. SUBJECT:	3. DATE:
Lawrence Livermore National Laboratory (LLNL), Livermore, CA	Long Term Corrosion Studies - Control of Samples and Measuring and Test Equipment (M&TE)	August 25 - September 2, 1997

4. SURVEILLANCE OBJECTIVE: Determine if LLNL personnel are implementing appropriate controls for samples and M&TE used in support of the Long Term Corrosion Studies (WBS 1.2.2.5.1 Activity E-20-50).

5. SURVEILLANCE SCOPE:	6. SURVEILLANCE TEAM:
Evaluate implementation of requirements described in the Office of Civilian Radioactive Waste Management (OCRWM) Quality Assurance Requirements and Description document, Section 12.0, and Supplement II, by reviewing documentation, observing equipment and samples, and interviewing technical personnel.	Team Leader: James M. Ziemba Additional Team Members- none N/A

7. PREPARED BY:		8. CONCURRENCE:	
James M. Ziemba Surveillance Team Leader	8/21/97 Date	Donald G. Horton Director, OQA	8/27/97 Date

SURVEILLANCE RESULTS

9. BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

The surveillance reviewed the key elements of the control of M&TE and samples. The key elements evaluated were as follows:

1. A technical procedure or Scientific Notebook (SN) was developed and used for the identification of samples and M&TE.
2. The documentation of calibrations included the appropriate information.
3. Samples were appropriately identified and traceable.

The surveillance started on August 25, 1997, and was completed on September 2, 1997. The following personnel were contacted during the surveillance:

LLNL - G. Gdowski, F. Wang, J. Estill, R. Monks.

10. SURVEILLANCE CONCLUSIONS:

The results of this surveillance indicate that LLNL personnel are effectively implementing their QA program for the control of samples and M&TE related to the Long Term Corrosion Studies. No deficiencies were identified during the surveillance; however, recommendations related to the documentation of calibration information in the corrosion studies database were provided to LLNL personnel.

11. COMPLETED BY:		12. APPROVED BY:	
James M. Ziemba Surveillance Team Leader	9/23/97 Date	Director, OQA	10/10/97 Date

ENCLOSURE

9. BASIS FOR EVALUATION/DESCRIPTION OF OBSERVATIONS: (Cont'd)

QARD Requirements:
Section 12.2.1A, Measuring and test equipment including equipment that contains software or programmable hardware, shall be calibrated, adjusted, and maintained as a unit at prescribed intervals, or prior to use, against reference calibration standards having traceability to nationally recognized standards.

LLNL Long Term Corrosion Studies personnel use balances and digital calipers to collect critical measurements of the metal specimens. This equipment is calibrated by LLNL personnel using calibrated standards, a weight set and gauge blocks. These standards are checked by calibration service suppliers found on the OCRWM Qualified Suppliers List.

LLNL uses Mettler analytical balances, serial numbers 111547344 and 1114463500. These balances are calibrated using certified weight set 4935818. This weight set is calibrated by the Primary Standards Laboratory at Sandia. The balances are calibrated in accordance with TIP-CM-04, RO – User Calibration of Mettler AT200 Analytical Balance and TIP-CM-10, RO – User Calibration of Analytical Balance prior to and after each day's or series of specimens. There have been approximately 363 calibrations of balances since 7/12/96 (the start of this study).

LLNL uses several digital calipers: 11497, 11356, 60226, 60229, 65361, and 64768. These are calibrated in accordance with TIP-CM-05, RO (CN# TIP-CM-05-0-1) User Calibration of Fowler Ultra Cal Mark III Digital Caliper prior to use and after each day's or series of specimens. These calipers are calibrated using certified gauge blocks, serial number SNL 2278, which are calibrated by the Primary Standards Laboratory at Sandia.

Section 12.2.1 E, Calibrated measuring and test equipment shall be labeled, tagged, or otherwise suitably marked or documented to indicate due date or interval of the next calibration.
Section 12.2.1 F, Calibrated measuring and test equipment shall be uniquely identified to provide traceability to its calibration data.

A review of the calipers and balances listed above indicates that the equipment was properly labeled with calibration intervals as well as identification of unique serial numbers.

QARD Section 12.2.2, Documenting the Use of Measuring and Test Equipment - The use of measuring and test equipment shall be documented.
033-YMP-QP-12.0, Paragraph 12.0.9a – Control of Measuring and Test Equipment
As appropriate to equipment use and its calibration schedule, the documentation shall identify the processes monitored, data collected, or items inspected or tested since the

A review of LLNL Corrosion Studies databases indicates that the use of M&TE is well documented. Several individual tables in the Integrated Corrosion Test Facility (ICTF) database list the use of balances and calipers. These tables include:

ICTF Test Solutions Table
Pre-test 1X2 Galvanic Corrosion Specimen Dimension Table
Pre-test 1 ½ X 1 ½ Galvanic Corrosion Specimen Dimension Table
Pre-test 2 X 2 Galvanic Corrosion Specimen Dimension Table
Pre-test Crevice Corrosion Specimen Dimension Table
Pre-test U-bend Corrosion Specimen Dimension Table
Pre-test Weight-loss Corrosion Specimen Dimension Table
Post-test Crevice Corrosion Specimen Table
Post-test U-bend Stress Corrosion Cracking Weight Table
Post-test Weight-loss Specimen Weight Table

QARD Section 12.2.7, Measuring and Test Equipment Documentation - Measuring and test equipment calibration documentation shall include the following information:

Identification of the measuring or test equipment calibrated.
Traceability to the calibration standard used for calibration.
Calibration data.
Identification of the individual performing the calibration.
Identification of the date of calibration and the recalibration due date or interval, as appropriate.
Results of the calibration and statement of acceptability.
Reference to any actions taken in connection with out-of-calibration or nonconforming measuring and test equipment including evaluation results, as appropriate.
Identification of the implementing document (including revision level) used in performing the calibration.

A review of calibration documentation for the equipment listed above (calipers, balances, gauge block, and weight set) indicated all the required information was found on the calibrations certificates provided by the supplier and/or included in the ICTF Analytical Balance Calibration Log, ICTF Digital Caliper Calibration Log, and Calibration Certificate database (scanned copies of calibration certificates). The Caliper and Balance Calibration Logs did not include the technical procedure used to perform the calibration but referred to the SN, which listed the calibration procedure number (TIP-CM-05). This method was allowed by LLNL procedures. However, for clarification, it was recommended that a new column be added to the log for the documentation of the procedure number.

TIP-CM-02, RO – Receiving, Handling, and Storage of Specimens for Long-Term Corrosion Testing
Paragraph 4.1, "Specimen identification numbers will be verified for agreement with procurement documents," and ***"Receipt of the specimens will be documented in the scientific notebook."***

Reviewed SN #00241 - E-20-50 Long Term Corrosion Studies and found several entries related to receipt of samples from the Metal Samples Company. Entries were noted for 9/14/95, 9/20/95, 1/14/97, 1/17/97, 1/21/97, 1/22/97, 1/28/97, 5/1/97, 5/2/97, and 6/18/97. Purchase Order and sample identification references were listed in the SN entries.

Paragraph 4.2, "Specimens will be stored in a locked cabinet (e.g. Stanley-Vidmar type cabinet) in reasonable proximity to the testing area."

A review of SN #00241, the ICTF database (several tables), and cabinets in Building 435, confirms that specimens are stored in locked cabinets unless in use. This review confirms that records related to these specimens provide appropriate traceability of the samples.

Paragraph 4.3, "Each specimen after removal from testing and in-between post-test analysis will be placed in its own inert protective packaging."

A review of several drawers of specimens in Stanley-Vidmar type cabinets in Building 435 and a review of specimens that were in-process (just removed from the test vessels), confirms that specimens are stored in an inert protective package.

Paragraph 4.4, "If analysis of a specimen requires that it be sectioned, the pieces of the specimen will be placed in labeled separate storage packages after analysis."

Discussion with J. Estill and F. Wang indicate that there has been no sectioning of samples to date.

TIP-CM-01, RO – Accounting of Test Specimens for the Long-Term Corrosion Testing
Paragraph 4.1.1, "Each specimen will have a unique identification number that will be placed on the specimen during fabrication. The placement of the identification number must not influence the corrosion processes to be characterized."

A review of several tables in the ICTF database and observation of some in-process specimens (buttons) and specimens in storage in the storage cabinets confirms that each sample/specimen has a unique identification number. These numbers are in part based on the type of test they will undergo. A discussion with J. Estill and F. Wang indicates that the placement of specimen serial number in the metal will not adversely influence the overall corrosion process.

Paragraph 4.1.2, "...the position of each specimen on the specimen rack will be documented in the scientific notebook. The identification will also include the rack number and vessel number. The vessels will have unique identification numbers."

A review of two files in the ICTF database, the ICTF Test Specimen Disposition Table and the Vessel/Rack Digital Photograph file, shows that each specimen's position is satisfactorily documented. SN #00241 refers to the storage location of the specimens when they are received. The SN also states that the locations of the specimens on the specimen rack is included in the aforementioned table.

Paragraph 4.2, "Specimen tracking information will contain as a minimum, date of specimen receipt from vendor, specimen identification number, specimen storage location, specimen start and finish dates of testing, specimen location in test vessels, dates and custodian of specimens during post test analysis, and the results of post test analysis."

The ICTF Test Specimen Disposition Table includes all the listed minimum information. A select number of specimen's entries were verified and cross checked to other databases, including the ICTF Test Specimen Origin Table. This origins table lists sample identification, certified material test report (CMTR), lot number, base metal CMTR, and other specimen unique information.