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

SURVEILLANCE REPORT OF

OAK RIDGE NATIONAL LABORATORY

VIENNA, VIRGINIA (ER JOHNSON)
OAK RIDGE, TENNESSEE (MARTIN MARIETTA)

SURVEILLANCE NUMBER HQ-SR-92-10

AUGUST 26, 1992
SEPTEMBER 1, 1992

VERIFICATION OF WASTE STREAM ANALYSIS MODEL AND PEER REVIEW OF WASTE CHARACTERISTICS DATABASE

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Approved By: R. D. Horton Date: 11/13/92
for Donald G. Horton
Director
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1.0 EXECUTIVE SUMMARY

A surveillance was conducted on August 26 at the offices of ER Johnson Associates (JAI - an ORNL subcontractor) and on September 1 at the offices of Martin Marietta Energy Systems (the ORNL M&O contractor) respectively.

The surveillance team visited JAI personnel in Vienna, VA to verify the technical adequacy of the verification process for the Waste Stream Analysis model. The team visited Martin Marietta Energy Systems to review the technical adequacy of the peer review process for the Waste Characteristics Database.

The surveillance team consisted of personnel from the Headquarters QA Division supplemented with two Technical Specialists. Eight recommendations, concerning the verification process for the Waste Stream Analysis model should be considered prior to issuance of the final verification report. It was determined that the technical adequacy of the peer review process for the Characteristics Database was acceptable.

2.0 SCOPE

Surveillance HQ-SR-92-10 was conducted to verify the technical adequacy of the verification work on the Waste Stream Analysis model and the peer review process used for verification of the Characteristics Database.

The surveillance team prepared separate technical checklists for each portion of the surveillance. Additionally, the team reviewed corrective actions for DR 90-008 and CARs 92-006, 92-007, and 92-008.

3.0 SURVEILLANCE TEAM

The surveillance team consisted of the following personnel:

Dennis Brown	HQAD/CER	Surveillance Team Leader
Camille Kerrigan	HQAD/TRW	Technical Specialist
Elliot Bogart	HQAD/TRW	Technical Specialist
John Buckley	NRC	Observer

4.0 PERSONNEL CONTACTED DURING THE SURVEILLANCE

The following personnel were contacted during the course of the surveillance:

N.Barrie McLeod, ORNL/JAI, Vice President
Ronald MacDonald, ORNL/JAI, Senior Consultant
David Joy, ORNL/MMES, Senior Staff Engineer
Scott Moore, ORNL/ASG, Staff Scientist
Karl Notz, ORNL/ASG, QA Engineer
Glen Cowart, ORNL/ASG, QA Engineer
Ron Pope, ORNL/MMES, Project Manager

5.0 SURVEILLANCE RESULTS

Both Technical Specialists used technical checklists to conduct the surveillance. No additional checklists were required.

5.1 Waste Stream Analysis (WSA) Model

Verification activities for the WSA model are 95% complete. The schedule has continued to slip due to other work priorities.

As a direct result of this surveillance, eight items still need to be addressed (See Section 6.0) before the verification report is finalized.

The surveillance team reviewed personnel qualifications and found them technically acceptable for personnel working on the WSA model.

The team examined documentation to verify the correctness of the computer code and documentation to verify that the fuel selected matched the selection rules for several allocation/selection test cases. The team also reviewed one test case concerning ten year old fuel which showed that the code correctly described processed fuel data.

A test case concerning decommissioned reactor fuel was reviewed. The WSA model was also reviewed to assure that user-input values were in fact used for fuel allocation.

The surveillance team examined cask loading option data and test cases. Additionally, the team reviewed the documentation which described using a lower priority cask when the preferred casks have too high a dose rate.

Finally, the team members reviewed the draft verification report.

5.2 Waste Characteristics Database

The surveillance team examined the peer review process used to review the Waste Characteristics Database.

The team evaluated the peer reviewer selection process. The team also reviewed the process used to resolve issues raised by the peer reviewers. A two-day comment resolution meeting had been held to resolve ORIGEN peer review panel comments. All other comments were handled on an individual basis. There were 550 individual comments that required resolution.

The team evaluated the peer review methods used to review the PC databases. It was determined that the review has been extensive enough to validate the data in the individual databases.

The process used to acquire data for the PC Radiological, Quantities, Serial Numbers, High-Level Waste, Final Assemblies, and Non-Fuel Assemblies Databases was examined. The team also examined the validation process that was performed outside of the peer review process.

The team reviewed personnel qualifications for four of the peer reviewers and found them to be technically acceptable (Eble, Luksic, Plodinec, Watrous).

The team concluded that the peer review process was adequate.

The peer review report had not been approved at that time because four peer reviewer signatures were still needed. Several other internal ORNL action items were scheduled for completion in early September.

5.3 Corrective Action Verification

The surveillance team determined that corrective actions for CARs 92-006 and 92-007 were complete. However, corrective action was still in process for DR 90-008 and corrective action response for CAR 92-008 was not adequate. CAR 92-008 has been returned to ORNL for resubmittal.

6.0 RECOMMENDATIONS

6.1 Several errors or omissions that were observed in the draft Waste Stream Analysis Verification Report should be addressed in the final report. Examples include tracing "spill year" back to "large/small capacity" in plants and the errors noted in the "PWR/BWR" labelling of test reactors.

6.2 The "selection of Hottest Fuel First" test case should be completed. The pointer problem appears to be fixed, however, the case needs to be run as a controlled version.

6.3 The Verification Report needs to reflect that the test case for "overflow fuel going to dry storage" has been modified.

6.4 For the case of dry storage (Test Case #4) it is recommended that a computer report be run to show that the oldest fuel remaining in pool has been picked up. This is already a requirement of the Verification Plan.

6.5 For the option of user-input acceptance rights, an "allocation rights" computer run should be completed in a slightly modified manner (e.g., by hand editing a small number of values); the exchanges should be reflected in the resulting selection. The latter condition should be verified. It is strongly recommended that the unmodified allocation rights be rerun at the same time to establish both a "no changes" and "correct changes" report for the same time period.

6.6 An indexing error in the computer run for the case of "averaged cask design curves using piecewise linear functions" needs to be fixed, and a controlled version generated with the change.

6.7 A hard copy computer run of NUMCASK (listed in the Verification Plan) needs to be located and maintained as a QA record. This run verifies the correctness of reduced heat at the repository (also increased fuel age) as referenced in the Test Case #3 criteria of the Verification Plan.