

May 27, 2008

Dr. Woodrow Whitlow, Jr., Director  
NASA Glenn Research Center at Lewis Field  
21000 Brookpark Road M.S. 3-2  
Cleveland, OH 44135

SUBJECT: NRC INSPECTION REPORTS 050-00030/08-01(DNMS) AND  
050-00185/08-01(DNMS) - NASA PLUM BROOK REACTOR FACILITY

Dear Dr. Whitlow:

On May 15, 2008, the NRC completed inspection activities at the NASA Plum Brook Reactor Facility. The purpose of the inspection was to determine whether the decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, during an onsite inspection on February 5-7, 2008, the inspector evaluated decommissioning performance and radiation survey activities. Accompanying the inspector during the inspection were personnel from the Oak Ridge Institute for Science and Education (ORISE), who performed confirmatory surveys of the Plum Brook Reactor facilities. At the conclusion of the on-site inspection on February 7, 2008, the inspectors discussed the inspection findings with members of your staff. A final report from ORISE of the results of their confirmatory surveys was provided to the NRC on May 13, 2008.

This inspection consisted of an examination of decommissioning activities at the NASA Plum Brook Reactor Facility as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

W. Whitlow

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We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

**/RA/**

Patrick L. Loudon, Chief  
Decommissioning Branch

Docket Nos.: 050-00030 and 050-00185  
License Nos.: TR-3 and R-93

Enclosure:  
NRC Inspection Reports 050-00030/08-01(DNMS)  
and 050-00185/08-01(DNMS)

cc w/encl: Radiation Health Program Director, Ohio Department of Health (ODH)  
S. Helmer, ODH  
M. Rubadue, ODH  
Ohio Environmental Protection Agency, Division of Planning  
K. Peacock, NASA, Plum Brook Station

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos.: 050-00030 and 050-00185

License Nos.: TR-3 and R-93

Report Nos.: 050-00030/08-01(DNMS) and 050-00185/08-01(DNMS)

Licensee: National Aeronautics and Space Administration

Facility: Plum Brook Reactor Facility  
Test Reactor and Mockup Reactor

Location: Sandusky, Ohio

Dates: February 5-7, 2008, and May 15, 2008

Inspectors: William G. Snell, Senior Health Physicist

Approved by: Patrick L. Loudon, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure

## **EXECUTIVE SUMMARY**

### **NASA Plum Brook Reactor Facility Inspection Report Nos. 050-00030/08-01(DNMS) and 050-00185/08-01(DNMS)**

This routine decommissioning inspection included a review of the licensee's current performance related to decommissioning activities and in-process confirmatory survey activities.

#### **Research and Test Reactor Decommissioning**

In-process independent confirmatory surveys have validated the adequacy and accuracy of the licensee's procedures and final status survey (FSS) results. Reviews of FSS records verified that residual contamination was less than the derived concentration guideline levels (DCGLs) stated in the licensee's final status survey plan.

## Report Details<sup>1</sup>

### **1.0 Research and Test Reactor Decommissioning (69013)**

#### **1.1 Inspection Scope**

In-process independent confirmatory surveys were conducted by personnel from the Oak Ridge Institute for Science and Education (ORISE) to assist the NRC in determining the adequacy and accuracy of the licensee's procedures and final status survey (FSS) results. Independent and side by side surveys were conducted in the Reactor Office and Laboratory Building (ROLB), the Sub-Pile Room and adjoining hallway within the Containment Vessel, and the Cold Pipe Tunnel within the Reactor Service Equipment Building. ORISE personnel also reviewed a number of licensee survey design/survey request packages, and the licensee's survey methodology.

Under separate cover letters, the licensee has provided the NRC with survey unit release records for embedded and underground piping and for surface areas in various locations throughout the site. These final status survey (FSS) result documents have been scanned into the NRC's electronic data system, ADAMS. The date of the cover letter under which the survey records were sent to the NRC and the ADAMS accession numbers for the records are:

October 23, 2007 (ML0080390430, ML0080390434, ML0080390437, ML0080390439, ML0080390445, ML0080390447, ML0080390455, ML0080390457, ML0080390458, ML0080390461, ML0080390469, ML0080390476);

November 12, 2007 (ML073170329, ML073170334, ML073170335, ML073170339, ML073170344, ML073170358, ML073170366, ML073170371, ML073170377, ML073170381, ML073170389, ML073170393, ML073170418, ML073170421, ML073170440, ML073170445, ML073170450);

November 28, 2007 (ML073330379, ML073330402, ML073330420, ML073330429, ML073330448, ML073330464, ML073330476, ML073330598, ML073330612, ML073330627, ML073330636, ML073330641, ML073330644, ML073330652, ML073330661, ML073330670, ML073330684, ML073330698);

December 4, 2007 (ML073400077, ML073400090, ML073400097, ML073400106, ML073400123, ML073400143, ML073400148, ML073400156, ML073400160, ML073400163, ML073400165, ML073400167, ML073400172, ML073400216);

December 20, 2007 (ML073610540, ML073610545, ML073610552, ML073610554, ML073610557, ML073610562, ML073610565, ML073610567, ML073610571, ML073610573, ML073610577, ML073610578, ML073610581, ML073610583, ML073610584, ML073610588);

February 27, 2008 (ML080590177, ML080590179, ML080590183, ML080590195, ML080590206, ML0805910247, ML080590254);

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<sup>1</sup> A List of acronyms used in the report is included at the end of the Report Details.

March 7, 2008 (ML080670210, ML080670215, ML080670218, ML080670264, ML080670266, ML080670273, ML080670275, ML080670285, ML080670365, ML080670382);

March 19, 2008 (ML080800386, ML080800395);

April 7, 2008 (ML080990653, ML080990665, ML080990679, ML080990688, ML080990691, ML080990695, ML080990703, ML080990707, ML080990708); and

May 2, 2008 (ML081270660, ML081270683, ML081270695, ML081270703).

The inspectors reviewed the above FSS records to verify that residual contamination was less than the derived concentration guideline levels (DCGLs) stated in the licensee's final status survey plan.

## 1.2 Observations and Findings

The Oak Ridge Institute for Science and Education provided the NRC with the results of their survey activities and review findings in the document, "Final Report-Independent Confirmatory Survey Summary and Results for the Plum Brook Reactor Facility, Sandusky, Ohio," dated May 6, 2008 (ML081480295). ORISE stated in the report that the FSS data packages reviewed accurately and adequately described the sequence of FSS activities and conditions at the site, and that all confirmatory measurement results were observed to be below the respective derived gross beta guideline levels for the radionuclides of concern.

One concern was identified by ORISE in that the licensee's floor monitor scan investigation levels were set to high. After reviewing the issue, the licensee concurred with the ORISE finding. The licensee took prompt corrective action: ceased all floor monitoring, developed lower scan investigation levels, and rescanned all areas previously scanned with the floor monitor. No anomalies were identified as a result of the rescans.

The inspector's review of FSS records for embedded and underground piping, and for surface areas identified no concerns. The survey results were determined to meet the DCGLs stated in the licensee's final status survey plan.

## 1.3 Conclusion

In-process independent confirmatory surveys have validated the adequacy and accuracy of the licensee's procedures and final status survey (FSS) results. Reviews of FSS records verified that residual contamination was less than the derived concentration guideline levels (DCGLs) stated in the licensee's final status survey plan.

### **3.0 Exit Meeting Summary**

The inspectors presented the inspection results to licensee management at the conclusion of the onsite inspection on February 7, 2008. A follow-up telephone exit was conducted with the Program Manager on May 15, 2008, following the receipt of the ORISE Final Report. The licensee acknowledged the findings presented.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**  
**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

- \*K. Peecook, NASA Program Manager
- \*W. Stoner, Radiation Safety Officer
- \*R. Case, Assistant Project Radiation Safety Officer
- \*J. Thomas, Project QA & Licensing Manager

\*Indicates presence at the exit meeting held on February 7, 2008.

**INSPECTION PROCEDURES USED**

IP 69013      Research and Test Reactor Decommissioning

**ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened      None

Closed      None

Discussed      None

**LIST OF ACRONYMS USED**

CFR	Code of Federal Regulations
DCGL	Derived Concentration Guideline Level
FSS	Final Status Survey
IP	Inspection Procedure
NASA	National Aeronautics and Space Administration
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education
PBRF	Plum Brook Reactor Facility
ROLB	Reactor Office and Laboratory Building

**DOCUMENTS REVIEWED**

Documents used during the inspection were specifically identified in the Report Details, above.