September 26, 2012

Mr. Ramon Lugo, III, Director
NASA Glenn Research Center at Lewis Field
21000 Brookpark Road M.S. 3-2
Cleveland, OH 44135

SUBJECT: NRC INSPECTION REPORT 05000030/12002(DNMS) AND 05000185/12002(DNMS) – NASA PLUM BROOK REACTOR FACILITY

Dear Mr. Lugo:

On September 13, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed inspection activities at the National Aeronautical and Space Administration (NASA) Plum Brook Reactor Facility, Sandusky, Ohio. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with the NRC requirements. Specifically, during an onsite inspection on September 12 – 13, 2012, the inspector evaluated decommissioning performance and conducted independent confirmatory radiation surveys. At the conclusion of the onsite inspection on September 13, 2012, the inspector discussed the inspection results with members of your staff.

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, no violations were identified.

In accordance with Title 10 of the Code of Federal Regulations (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 NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html.

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

Sincerely,

/RA/

Christine A. Lipa, Chief
Materials Control, ISFSI, and
Decommissioning Branch
Division of Nuclear Materials Safety

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

Enclosure:
NRC Inspection Report Nos. 05000030/12002(DNMS)
and 05000185/12002(DNMS)

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

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M. Rubadue, ODH
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P. Kolb, NASA, Plum Brook Station
W. Stoner, SAIC, Plum Brook Station

DISTRIBUTION w/encls:
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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.	05000030/12002(DNMS) and 05000185/12002(DNMS)
Licensee:	National Aeronautics and Space Administration (NASA)
Facility:	Plum Brook Reactor Facility Test Reactor and Mockup Reactor
Location:	Sandusky, Ohio
Dates:	September 12-13, 2012
NRC Inspector:	Jeremy E. Tapp, Health Physicist
Approved by:	Christine A. Lipa, Chief Materials Control, ISFSI, and Decommissioning Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY
NASA Plum Brook Reactor Facility
Inspection Reports 05000030/12002(DNMS) and 05000185/12002(DNMS)

The National Aeronautical and Space Administration (NASA) Plum Brook Reactor Facility has completed performing all remediation of the facility and has also completed all final status surveys at the site. The licensee was completing the shipment of the final radioactive waste packages remaining onsite. This routine decommissioning inspection included a review of the licensee's current performance related to decommissioning activities and performance of independent confirmatory radiation surveys. These surveys were performed in the land areas and analytical laboratory where radioactive materials were most recently stored or used.

Research and Test Reactor Decommissioning

The licensee adequately surveyed the shipment made on September 13, 2012, to demonstrate the dose rates were below the required Department of Transportation (DOT) limits. The shipment was also placarded and labeled in accordance with the applicable DOT requirements. (Section 1.0)

Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors

For the areas where confirmatory surveys were performed and survey packages reviewed, all results were consistent with the licensee's, and were appropriately released from radiological controls and below the applicable derived concentration guideline level (DCGL) or release limit. In addition, the survey packages were adequate and complete. All radioactive materials, including waste, debris and sources, have been sent offsite for disposal or transferred to another authorized user. (Section 2.0)

Report Details

1.0 Research and Test Reactor Decommissioning (Inspection Procedure (IP) 69013)

1.1 Inspection Scope

During the inspection, the licensee was preparing their final waste shipment to Energy*Solutions* in Clive, UT. The shipment consisted of three packages of mixed waste, which contained both radiological and chemical waste. The inspector performed confirmatory surveys of the mixed waste packages, including the truck and the trailer. These surveys were performed independently and side-by-side with the licensee to determine whether the licensee's survey results were adequate, achieved compliance with Department of Transportation (DOT) requirements, and were consistent with those of the inspector. The inspector also reviewed the licensee's placement of placards on the shipment and labels on the packages to determine if they met the applicable DOT requirements.

1.2 Observations and Findings

The inspector determined the licensee used appropriate survey instrumentation to perform surveys at the required locations. The appropriate placards and labels were readily visible and affixed or posted in the required locations. The licensee's survey results were consistent with those of the inspector and well below the DOT required limits.

No findings of significance were identified.

1.3 Conclusions

The licensee adequately surveyed the shipment made on September 13, 2012, to demonstrate the dose rates were below the required DOT limits. The shipment was also placarded and labeled in accordance with the applicable DOT requirements.

2.0 Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors (IP 83801)

2.1 Inspection Scope

The inspector toured the site and conducted interviews of licensee personnel to verify that all radioactive materials, including waste, debris and sources, had been sent offsite for disposal, and that the buildings were demolished and that areas were backfilled as described in the Decommissioning Plan. The inspector performed confirmatory surveys in five land areas where radioactive waste, debris, and contaminated soil were recently stored and handled, and in the former analytical laboratory where radioactive sources and equipment were used to verify the licensee remediated the areas to the applicable Derived Concentration Guideline Level (DCGL) or applicable release limit. The five land areas included the soil staging area south of the west parking lot, the backfilled area inside the restricted fence line where the former reactor and containment buildings stood, the backfilled area inside the restricted fence line over electrical manhole 3, the radioactive materials area (RMA) east of the reactor security building (RSB), and the west pentolite RMA. The associated release or verification survey records were

reviewed to determine if the licensee performed adequate surveys and, if necessary, sampling of the area.

2.2 Observations and Findings

By the conclusion of the inspection period, the licensee had completed all physical decommissioning work at the site. The inspector verified that the last radioactive waste shipment had been sent offsite to a licensed disposal facility, all areas had been surveyed and released from radioactive material controls, and all radioactive sources had either been disposed of or transferred to another authorized user.

The sodium iodide (NaI) detector walkover surveys that the inspector performed in the areas mentioned in the scope section above resulted in all readings being at background levels. No areas with significantly elevated readings were found. All areas, except for the backfilled area inside the restricted fence line over electrical manhole 3, had an associated survey package, which were reviewed by the inspector. The inspector determined that the licensee's survey data was consistent with that of the inspector. In addition, the inspector determined that the surveys performed for the packages reviewed were adequate for either release of the area from radiological controls or verification that the area's residual radioactivity was below the applicable DCGL.

Electrical manhole 3 was inaccessible during the inspection since it had already been backfilled so the inspector reviewed the survey package. The inspector determined that the licensee performed an adequate survey that included scan, smear, and sample data to justify its release from radiological controls. The NaI detector walkover survey above electrical manhole 3 resulted in all readings at background levels.

No findings of significance were identified.

2.3 Conclusions

For the areas where confirmatory surveys were performed and survey packages reviewed, all results were consistent with the licensee's, and were appropriately released from radiological controls and below the applicable DCGL or release limit. In addition, the survey packages were adequate and complete. All radioactive materials, including waste, debris and sources, have been sent offsite for disposal or transferred to another authorized user.

3.0 Exit Meeting Summary

The inspector presented the inspection results to licensee management at the conclusion of the onsite inspection on September 13, 2012. The licensee acknowledged the results presented and did not identify any of the documents reviewed by the inspectors as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Kolb, Program Manager
W. Stoner, Radiation Safety Officer
R. Case, Assistant Program Manager

LIST OF PROCEDURES USED

IP 69013	Research and Test Reactor Decommissioning
IP 83801	Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	None
Discussed	None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
DCGL	Derived Concentration Guideline Level
DNMS	Division of Nuclear Materials Safety
DOT	Department of Transportation
NaI	Sodium Iodide
NASA	National Aeronautical and Space Administration
NRC	U. S. Nuclear Regulatory Commission
IP	Inspection Procedure
RMA	Radioactive Materials Area
RSB	Reactor Security Building

DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Survey #: NASA-12-1166; Soil Staging Area South of West Parking Lot; dated 8/9/12

Survey #: NASA-12-1181; Backfilled Area inside the Restricted Area Fence Line; dated 8/16/12

Survey #: NASA-12-1165; Backfilled Area inside the Restricted Area Fence Line; dated 8/9/12

Survey #: NASA-12-1169; Soil Staging Area South of the West Parking Lot; dated 8/8/12

Survey #: NASA-12-1177; Inside Fence Line; dated 8/15/12

Survey #: NASA-12-0965; RMA East of RSB; dated 6/21/12

Survey #: NASA-12-1141; West Pentolite RMA; dated 8/6/12

Survey #: NASA-12-1230; West Pentolite RMA; dated 8/30/12

Survey #: NASA-12-1266; West Pentolite RMA; dated 9/11/12

Survey #: NASA-12-1219; Count Room in Chem Lab Building 7143; dated 8/29/12

Legacy Material and Equipment Release Worksheet; Electrical Manhole 3; dated 8/23/12