

November 4, 2004

Dr. Julian M. Earls, Director
NASA Glenn Research Center at Lewis Field
21000 Brookpark Road M.S. 3-2
Cleveland, Ohio 44135

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-30/2004-201
AND NO. 50-185/2004-202

Dear Dr. Earls:

This refers to the inspection conducted on September 13-17, 2004, at your Plum Brook Reactor Facility. The inspection included a review of decommissioning activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, no safety concerns or noncompliance with NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.790 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). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this inspection, please contact Mr. Thomas Dragoun at 610-337-5373.

Sincerely,

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Programs
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-30 and 50-185
License Nos. TR-3 and R-93

Enclosure: NRC Inspection Report Nos. 50-30/2004-201 and 50-185/2004-201
cc w/enclosure: See next page

National Aeronautics and
Space Administration

Docket Nos. 50-30/185

cc:

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Test, Research and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket Nos: 50-30 and 50-185

License Nos: TR-3 and R-93

Report Nos: 50-30/2004-201 and 50-185/2004-202

Licensee: National Aeronautics and Space Administration

Facility: Plum Brook Reactor Facility
Test Reactor and Mockup Reactor

Location: Sandusky, Ohio

Dates: September 13-17, 2004

Inspectors: Audrey C. Hayes
Thomas F. Dragoun

Approved by: Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY
NASA Plum Brook Reactor Facility
Report Nos: 50-30/2004-201 and 50-185/2004-201

The focus of this inspection was the on-site review of selected aspects of the decommissioning program including organization and staffing, corrective action programs, final status surveys, industrial safety program, and waste packaging and transportation.

Organization and Staffing

- The organization and staffing were consistent with and Decommissioning Plan (DPlan) requirements.

Corrective Action Program

- The inspector determined that the corrective action program for deficiencies identified by workers and staff lacked written guidance.

Final Status Surveys

- The licensee was developing a final status survey plan in accordance with commitments in Section 4 of the DPlan.

Industrial Safety

- The inspector determined that the licensee and contractors have implemented the industrial safety program specified in the DPlan.

Waste Packaging and Transportation

- The shipment of radwaste satisfied the regulatory requirements and licensee commitments.

REPORT DETAILS

Summary of Plant Status

Dismantling crews were at work removing equipment. Waste was loaded into intermodal packages for shipment. Planning was underway for the transition from dismantlement and remediation to the conduct of Final Status Surveys.

1. Organization and Staffing

a. Inspection Scope (IP 69013)

The inspector reviewed the following to determine if the organization and the qualifications of the staff satisfied the requirements in Technical Specification (TS) Section 6.0 and the Decommissioning Plan (DPlan) Section 2.4:

- staff responsibilities
- review of qualifications
- NASA Audit Report "Staff Qualifications" dated May 26, 2004

b. Observations and Findings

Section 2.4.2.1 of the DPlan describes the structure of the US Army Corps of Engineers (USACE) on-site organization and off-site support personnel. This section was completely changed in Revision 3 of the DPlan dated June 23, 2004. Minor changes were also made to the NASA and MWH organizations. The inspector determined that the new description of the USACE organization more accurately described the functions and responsibilities of the USACE staff. Although job titles have changed, the key USACE safety personnel remain the same. The training and experience of these personnel were previously determined to be satisfactory and able to accomplish the assigned responsibilities.

NASA instituted an oversight program to review the qualifications of selected contractor new hires. This effort was implemented to assure that the training and experience requirements of the site staff complies with applicable DPlan and TS requirements.

c. Conclusions

Within the scope of this review, the organization and staffing were found to be consistent with DPlan requirements.

2. Corrective Action Program

a. Inspection Scope (IP 69013)

The inspector reviewed the following to determine if DPlan Section 1.2.4.1 "Quality Assurance" was implemented:

- NASA, USACE, and MWH processes to identify, investigate, determine root causes, and document corrective actions for deficiencies
- interviews to determine worker understanding of the process for reporting deficiencies

b. Observations and Findings

Senior managers from the on-site organizations indicated that deficiencies identified by workers and supervisors were being corrected. However, no procedure or policy was available as guidance for documenting and follow up for these deficiencies or differing professional opinions. Most felt that reportable events that required Decommissioning Safety Committee or Project Safety Committee involvement were properly documented and resolved.

The NASA Decommissioning Project Manager indicated that NASA Corrective Action System (CA-5), currently used for follow up QA audit findings, will be expanded for site wide use. This matter will be reviewed in a future inspection as an Inspector Follow-up Item (IFI) 50-30/2004-201-01.

c. Conclusions

The inspector determined that the corrective action program for deficiencies identified by workers and staff lacked written guidance.

3. **Final Status Surveys**

a. Inspection Scope (IP 69013)

The inspector reviewed the following to ensure that commitments in DPlan Chapter 4 "Proposed Final Status Survey Plans" were satisfied:

- NASA Letter to Sheryl A. Leeper, USACE, from Timothy J. Polich, NASA Project Manager, "Subject: FSS Plan Comments" dated June 29, 2004
- USACE Letter to James Crocker, MWH Constructors, no subject, dated 22 March 2004. Clarifies documents that constitute the Historic Site Assessment
- NASA PBOSG, "Audit of Characterization Activities on the NASA Plum Brook Reactor Facility (PBRF) Decommissioning and Decontamination Project" by John Ross and Michael Sudsina dated March 9, 2004
- MWH Letter to Sheryl Leeper, USACE, from James E. Crocker, MWH Project Manager, "Additional Historical Information on the PBRF Open Land Areas" dated February 13, 2004
- MWH Letter to Sheryl Leeper, USACE, from James E. Crocker, MWH Project Manager, "Preliminary Open Land Survey Data and Assessments" dated February 11, 2004
- MWH Letter to Sheryl Leeper, USACE, from James E. Crocker, MWH Project Manager, "Additional Historical Information on the Storm Drains and Characterization Strategy" dated February 24, 2004

- MWH Minutes of meeting of the Project Safety Committee, “Emergency Action Plan, FSS Plan” held June 30, 2004
- Memo to file from Ted G. Alber, “Open Items Remaining on the FSS Plan” dated September 12, 2003
- NASA Report “An Evaluation of the Plum Brook Reactor Facility and Documentation of Existing Conditions, Volume 3: Physical Characterization of Radioactive/Contaminated Areas of the PBRF” by Teledyne Isotopes, dated December 1987

b. Observations and Findings

The inspector determined from a review of documents and interviews with personnel that NASA, USACE, and MWH are actively finalizing the Derived Concentration Guide Lines (DCGL) to be used to determine if a survey unit can be released for unrestricted use in accordance with 10 CFR 20 Subpart E-“Radiological Criteria for License Termination.” In addition, the guidance and procedures for designing the Final Status Surveys (FSS) in accordance with the “Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)” were being developed.

The MWH staff expressed concern that the Historical Site Assessment (HSA) used to establish the boundaries of a survey unit, determine its MARSSIM “classification” and plan the required remediation and final status surveys, was flawed. The inspector reviewed the results of radiological scoping surveys completed by NASA in 1985 and 1998 and interviewed NASA retirees who operated the reactor, performed the 1985 survey, and were frequently on site to provide assistance. The inspector concluded that the records retained by NASA and current information supplied by the retirees provided an excellent basis for the HSA.

Some technicians indicated that training for conducting characterization and final status surveys was not provided. Also, some of the survey requirements were difficult to understand or were confusing. MWH management stated that additional technicians were hired and were currently in training.

Two senior technicians described a survey they performed of the Pentolite Ditch and found unanticipated contamination hot spots. After completing a survey of the assigned area, they surveyed some adjacent areas where they found the hot spots. The inspector commended the technicians for their initiative.

c. Conclusions

The licensee was developing a final status survey plan in accordance with commitments in Section 4 of the DPlan.

4. Industrial Safety

a. Inspection Scope (IP 69013)

To verify the implementation and effectiveness of the industrial safety program required by the DPlan Section 3.2.4, inspector reviewed:

- C injury records
- C use of safety equipment in the work zones
- C implementation of safety requirements for work in a confined space (Reactor Quadrant)
- C accompanied the NASA Project Safety Officer on daily tours of the work zones

b. Observations and Findings

The inspector found that protective equipment continued to be used properly by workers. Activities observed were performed in accordance with safe practices.

There were no OSHA reportable lost time injuries since the last inspection of this program. The record remains at one reportable injury since the program began in 2001. The industrial safety program continues to be fully and effectively implemented.

The inspector noted that the first aid kit prominently located at the access control point was sealed with tape. The MWH EH&S supervisor stated that this was done so that safety personnel would know that supplies were removed and should be replaced. This eliminated the need for frequent inventory of the contents. The inspector noted that the seal might discourage workers from opening the kit. In addition, workers may not be aware that first aid treatment was available by qualified personnel at the control point at any time that work was in progress. Management stated that this matter would be reviewed.

The inspector also noted that a rumor circulated that a worker was injured and was fired for not using the proper safety equipment. Interviews with a subcontractor supervisor (MOTA) indicated that a worker was fired but for reasons unrelated to the use of safety equipment.

c. Conclusion

The inspector determined that the licensee and contractors have implemented the industrial safety program specified in the DPlan.

5. Transportation of Waste

a. Inspection Scope (IP 69013)

The inspector reviewed the following to ensure that the packaging and classification of radioactive waste (radwaste) was conducted in accordance with

NRC requirements in 10 CFR Parts 20 and 71, DOT requirements in 49 CFR Parts 171 to 178, and Section 3.2 of the DPlan:

- observed a radiation survey on an empty (incoming) truck and trailer
- observed a radiation survey on a loaded (outbound) truck and trailer containing two intermodal packages
- reviewed the documents and records for the load

b. Observations and Findings

No deficiencies were noted during observation of transportation activities.

Some unique good practices were noted. A digital camera was used to take pictures of the package contents before the lid was attached. The pictures were distributed via the LAN for review by the staff responsible for transportation. The staff determined that the cribbing, bracing, and orientation of the waste items ensured that the package would not be breached in case of an accident in transit.

The receipt radiation survey of the truck included a detailed survey of the cab including smear surveys of the floor mats, control pedals, and dashboard. The survey of the trailer was similarly complete.

An engineer employee of the burial site (Envirocare) and stationed at Plum Brook conducted a thorough review of the load and all documentation before the truck was allowed to leave. This review included federal, state, waste volume reduction company and burial site requirements.

c. Conclusions

The shipment of radwaste satisfied the regulatory requirements and licensee commitments.

6. Exit Interview

The inspection scope and results were summarized on September 17, 2004, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

K. Peecook, NASA Senior Project Engineer
T. Polich, NASA Decommissioning Project Manager
P. Kolb, NASA Environmental Monitoring Program Manager
J. Crooks, NASA retiree
J. Ross, NASA retiree
D. Sheibley, NASA retiree
J. Thomas, ANL/NASA Licensing Engineer
J. Archer, MWH Environment, Health, and Safety Supervisor
T. Alber, MWH FSS Characterization Manager
J. Crocker, MWH Project Manager
T. Tritch, MWH FSS Engineer
R. Warnick, MWH Health Physics Supervisor
S. Leeper, USACE Resident Engineer
L. Powell, USACE Health Physicist
J. Fuerstenberg, PBOSG Administrative Assistant

INSPECTION PROCEDURES USED

IP 69013 RESEARCH AND TEST REACTOR DECOMMISSIONING

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened IFI 50-30/2004-201-01 NASA Corrective Action System (CA-5) will be expanded for site wide use

Closed none

LIST OF ACRONYMS USED

CFR Code of Federal Regulations
DPlan Decommissioning Plan
EH&S Environment, Health, and Safety
LAN Local Area Network
MOTA Mechanical Organization Technical Assistance
MWH Montgomery Watson Harza
NASA National Aeronautics and Space Administration
NRC Nuclear Regulatory Commission
TS Technical Specification
USACE United States Army Corps of Engineers