

January 27, 2003

Mr. Donald J. Campbell, Director
NASA Glenn Research Center at Lewis Field
21000 Brookpark Road M.S. 3-2
Cleveland, OH 44135

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORTS NO. 50-30/2002-202
AND NO. 50-185/2002-202

Dear Mr. Campbell:

This letter refers to the inspection conducted on December 9-12, 2002, 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, one non-cited violation was identified concerning the implementation of the radiation safety program. Prompt and effective action was taken by site management to correct this finding. 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
Operating Reactor Improvements Program
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. 50-30/2002-202 and 50-185/2002-202

cc w/enclosure: See next page

National Aeronautics and
Space Administration

Docket Nos. 50-30/185

cc:

Ohio Department of Health
ATTN: Radiological Health Program
Director
P.O. Box 118
Columbus, OH 43216

Ohio Environmental Protection Agency
Division of Planning
Environmental Assessment Section
P.O. Box 1049
Columbus, OH 43216

Mr. J. Eric Denison
Bureau of Radiation Protection
Ohio Department of Health
P.O. Box 118
Columbus, OH 43216

Mr. Hank Pfanner
NASA
Plumbrook Station
6100 Columbus Avenue
Sandusky, OH 44870

Mr. Timothy Polich
NASA
Plumbrook Station
6100 Columbus Avenue
Sandusky, OH 44870

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.: 50-30/2002-202 and 50-185/2002-202

Licensee: National Aeronautics and Space Administration

Facility: Plum Brook Reactor Facility
Test Reactor and Mockup Reactor

Location: Sandusky, Ohio

Dates: December 9-12, 2002

Inspector: Thomas F. Dragoun

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

EXECUTIVE SUMMARY
NASA Plum Brook Reactor Facility
Report Nos.: 50-30/2002-202 and 50-185/2002-202

The primary focus of this routine, announced inspection was the on-site review of selected aspects of the decommissioning program including radiation protection, environmental monitoring, and recordkeeping.

Radiation Protection

- The licensee's radiation protection program and implementing procedures were satisfactory. A NCV was cited for an apparent failure to establish the NASA RSO's authority.

Environmental Monitoring

- The environmental sampling program satisfied the regulatory requirements.

Recordkeeping

- The recordkeeping program satisfied the regulatory requirements and licensee commitments.

REPORT DETAILS

Summary of Plant Status

The Plum Brook Reactor Facility (PBRF) consisted of two reactors: a 60 MW light water cooled and moderated tank type test reactor, and a 100 KW open pool mock-up reactor. Both reactors were located in the same building. The reactors were permanently shut down in 1973 and the fuel removed. On March 20, 2002, the NRC approved the licensee's proposed Decommissioning Plan (DPlan), revision 1, dated March 2001, as amended.

Currently, the licensee was actively removing loose equipment from the quadrants surrounding the test reactor and was making preparations for the removal of the highly radioactive reactor internal components and segmentation of the reactor vessel.

1. Radiation Protection

a. Inspection Scope

The inspector reviewed selected aspects of the following procedures and program areas to ensure that the requirements in Technical Specifications (TS) Sections 6.6 and 6.10, Decommissioning Plan (DPlan) Section 3.1, and 10 CFR Part 20 were satisfied:

- Procedure RP-100, "Radiological Protection Plan for the Decontamination and Decommissioning of the Plumbrook Reactor Facility", revision 1, dated May 16, 2002.
- Procedure RP-102, "Scheduling Detroit Edison Contracted Radiation Protection Services", revision 0, dated August 29, 2002
- Procedure RP-103, "Issuance of Whole Body Dosimetry", revision 0, dated August 29, 2002
- Procedure RP-104, "Lost/Damaged Dosimetry", revision 0, dated August 29, 2002
- Procedure RP-106, "Multiple Dosimeter and Lens of Eye Monitoring", revision 0, dated August 29, 2002
- Procedure RP-200, "Respiratory Protection Plan", revision 1, dated June 7, 2002
- Procedure RP-300, "Internal Dosimetry Program Technical Basis Document", revision 0, dated July 12, 2002
- Procedure RP-301, "Dose Calculation from Breathing Zone Air Monitoring", revision 0, dated July 18, 2002
- Procedure RP-302, "Intake Investigation", revision 0, dated July 18, 2002
- Procedure RP-303, "Administrative Dose Assessment Review", revision 0, dated July 18, 2002
- Procedure RP-304, "Scheduling and Collection of Bioassays", revision 0, dated July 18, 2002
- Presentation "Reactor Vessel Segmentation Operational Readiness Review" by Framatome held on November 26, 2002
- NASA memorandum, "Reactor Internals Removal and Tank Segmentation Operational Readiness Review - Questions and Action Items", undated

- ALARA Evaluation, post job review of "Reactor Investigation", dated December 6, 2002, involving WEP-01-013 and RWP No. PB-02-117.

b. Observations and Findings

The radiation protection program was documented in the DPlan to satisfy the requirement in 10 CFR 20.1101(a). The program documentation and the implementing procedures were detailed and thorough. Some elements of the program were properly implemented. For example, Section 9.6.1 of the DPlan required the NASA Project Radiation Safety Officer (NASA RSO) maintain the personnel dose records. Section 10.5.2 required the NASA RSO to review and approve all radiation work permits (RWP). Records indicated that these requirements were met.

Section 4.1.5 of the DPlan required the delegation of sufficient authority to the NASA RSO to enforce the regulations and administrative procedures for all work on-site by NASA and contractor personnel. However, since the NASA RSO was an Argonne National Laboratory (ANL) employee on detail to the project (not a permanent NASA employee), interviews with NASA and contractor personnel indicated that there were misunderstandings regarding his authority. The failure to empower the NASA RSO in accordance with the DPlan constitutes an apparent violation of 10 CFR 20.1101(a).

In response to this situation, NASA Decommissioning Project Management convened a meeting of the radiation protection functional team consisting of contractor radiation protection representatives. The authority of the NASA RSO was clarified at that time. Team members were also advised that project management would periodically review this situation to ensure that no misunderstanding regarding roles and responsibilities had developed. In recognition of the prompt and effective management corrective action, this matter has been classified as a Non-Cited Violation (NCV) in accordance with NRC Enforcement Policy NUREG-1600 Revision 4, dated September 30, 2002.

The licensee's plan for removal of the highly radioactive components inside the reactor vessel and then segmenting the vessel was in the final stages. Several site personnel attended mock-up training at the contractor's (Wachs) site. Interviews indicated that a few site personnel had performed similar work during the decommissioning at Department of Energy research reactor sites (CP-5 and Omega West).

c. Conclusions

In general, the licensee's radiation protection program and implementing procedures were satisfactory. A NCV was cited for an apparent failure to fully establish the NASA RSO's authority.

2. Environmental Monitoring

a. Inspection Scope

The inspector reviewed the following to ensure that environmental monitoring was carried out as specified by TS 3.5 and 3.6 and DPlan Section 3.1.2.5:

- United States Army Corps of Engineers (USACE) document, "Environmental Media Sampling and Analysis Plan" dated September 2002. Approved for use by NASA letter dated October 3, 2002
- "Chain of Custody" forms, Coc Nos.1002-1 and 112002
- USACE Hazardous, Toxic and Radioactive Waste Center of Expertise Letter to STL St. Louis, dated May 10, 2000. No subject (provides audit findings and certifies laboratory analytical results until January 14, 2002).

b. Observations and Findings

The inspector accompanied USACE technicians during the change out of a particulate filter in a fence line continuous air sampler and taking of a ground water sample. Good techniques were used.

The inspector discussed the selection of ground water sampling locations and schedule with the NASA and USACE environmental managers. The site hydrology had been determined and deep and shallow sampling wells were installed during the reactor operations phase. The technical basis for sampling from selected wells during decommissioning activities was satisfactory.

Samples to be sent to the off-site laboratory (STL St. Louis) for chemical and radioanalysis were screened by the on-site laboratory. Screening consisted of liquid scintillation and gamma scans to ensure that samples could be sent as non-radioactive shipments in accordance with Department of Transportation regulations. Discussions with the laboratory technician indicated that generally accepted laboratory techniques were used to prepare and analyze samples.

The USACE certification of the STL St. Louis laboratory had expired in January 2002. However, e-mail from the USACE laboratory quality assurance staff indicated that an audit was completed in July 2002, and no negative findings were reported. A copy of the report was not available on-site. Based on this information, re-certification was expected.

The inspector noted that ground water samples were subjected to several analysis for toxic and hazardous chemicals. The NASA environmental manager stated that this was done in anticipation of a future request to the United States Environmental Protection Agency for the release of the site.

c. Conclusions

The environmental sampling program satisfied the regulatory requirements.

3. Record keeping

a. Inspection Scope

The inspector reviewed the following to ensure that the licensee's recordkeeping program satisfied the requirements in 10 CFR 20 Subpart L, TS Section 6.13, and licensee administrative procedures:

- Procedure PBRF-AD-003, "Work Execution Package Closeout", revision 1, undated
- Completed WEP package MW-WEP-02-021, "General Housekeeping and Maintenance" revision 0, dated September 6, 2002. This included:
 - WEP Approval Sheet
 - WEP Table of Contents
 - daily Prejob Briefing Attendance sheets for the period October 2 to November 28, 2002
 - Job Safety Analysis
 - Radiation Work Permit PB-02-008
 - Daily Activities Plan sheets for October 2 to November 27, 2002
- Completed WEP package MW-WEP-02-022, "Cask Transfer Cart Rail System Modifications", revision 0, dated October 31, 2002.

b. Observations and Findings

A central file system was established and maintained by the prime labor contractor Mechanical Organization Technical Assistance (MOTA). An administrative assistant records and issues the WEP identification numbers and keeps all original copies of the forms associated with the WEP. WEP packages are closed by the Quality Assurance Manager who completes and signs a checklist of package contents.

c. Conclusions

The recordkeeping program satisfied the regulatory requirements and licensee commitments.

4. Exit Interview

The inspection scope and results were summarized on December 12, 2002, 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

F. Greco, NASA, Decommissioning Project Management
K. Peecook, NASA Senior Project Engineer
T. Polich, NASA Decommissioning Project Manager
P. Kolb, NASA Environmental Manager
J. Thomas, NASA Quality Assurance Manager
W. Watson, USACE Project Management and Quality Assurance
S. Leeper, USACE Environmental Manager
S. Neilson, USACE Safety Manager
S. Davidson USACE Radiological Manager
C. Fellhaur, ANL Construction Manager
K. Geber, ANL Project Radiation Safety Officer
H. Bayes, ANL Project Safety Officer
J. LeBlanc, MWA Site Manager
B. Moyers, MWA Construction Manager
D. McGee, Framatome/Duke Engineering & Services Characterization Manager
K. Slater, Framatome/Duke Engineering & Services Training Manager
J. Fuerstenberg, PBOSG Administrative Assistant
L. Witt, MOTA Administrative Assistant

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened None

Closed None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
DPlan	Decommissioning Plan
MOTA	Mechanical Organization Technical Assistance
MWA	Montgomery Watson Associates
NASA	National Aeronautics and Space Administration
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PBOSG	Plum Brook Operations Support Group
RSO	Radiation Safety Officer
RWP	Radiation Work Permit
TS	Technical Specification
USACE	United States Army Corps of Engineers
WEP	Work Execution Package