

National Aeronautics and  
Space Administration  
**John H. Glenn Research Center**  
**Lewis Field**  
Plum Brook Station  
Sandusky, OH 44870



7030

**1000 05 2001**

Reply to Attn of:

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Report of Reactor Status for the NASA Plum Brook Reactor  
(License No. TR-3, Docket 50-30) and the NASA Plum Brook  
Mock-Up Reactor (License No. R-93, Docket 50-185)

Enclosed is the Annual Status Report, dated January 2001, for the Plum Brook Reactor (License TR-3) and the Plum Brook Mock-Up Reactor (License R-93). This report is for the reporting period January 1, 2000, through December 31, 2000. Submission of this annual report is in compliance with Section 3.31 of the current TR-3 and R-93 possess-but-not-operate licenses which became effective May 19, 1998.

Subject reactors continue to be maintained in a protected safe storage condition.

A handwritten signature in cursive script, reading "Henry G. Pfartner".

Henry G. Pfartner  
Engineer, Plum Brook Reactor Facility

Enclosure

Approved:

A handwritten signature in cursive script, reading "Randall B. Furnas".

Randall B. Furnas  
Director, Engineering and Technical Services

AD20

cc:

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## ANNUAL STATUS REPORT

Reporting Period: January 1, 2000 - December 31, 2000

NASA, Plum Brook Reactor  
License No. TR-3  
Docket No. 50-30

NASA, Plum Brook Mock-Up Reactor  
License No. R-93  
Docket No. 50-185

USNRC Dismantling Order  
Dated May 26, 1981

NASA Application to USNRC,  
Dated July 26, 1985,  
Requesting Return to  
"Possess-But-Not-Operate" Status

NASA, Plum Brook Reactor  
License No. TR-3  
Amendment #8  
November 30, 1989

NASA, Plum Brook Mock-Up Reactor  
License No. R-93  
Amendment #4  
October 12, 1989

NASA, Plum Brook Reactor  
License No. TR-3  
Amendment #9  
May 19, 1998

NASA, Plum Brook Mock-Up Reactor  
License No. R-93  
Amendment #5  
May 19, 1998

NASA, Plum Brook Reactor  
License No. TR-3  
Amendment #10  
November 16, 1999

NASA, Plum Brook Mock-Up Reactor  
License No. R-93  
Amendment #6  
June 23, 1999

January 2001

NASA Glenn Research Center  
Plum Brook Station  
6100 Columbus Avenue  
Sandusky, Ohio 44870

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**ANNUAL STATUS REPORT**  
**FOR THE**  
**NASA PLUM BROOK REACTOR AND PLUM BROOK MOCK-UP REACTOR**

**1.    Introduction:**

The following Annual Status Report for the period January 1, 2000, through December 31, 2000, has been prepared pursuant to Section 3.3.1 of the Plum Brook Reactor Facility (PBRF) TR-3 and the Mock-Up Reactor (MUR) R-93 Licenses both effective May 19, 1998. Both of the above-mentioned reactors are licensed as "possess-but-not-operate."

**2.    Status of Reactor Facility:**

At the time NASA requested a Dismantling Order in 1980, funding for the reactor dismantling project was anticipated, and an active dismantling effort was planned and scheduled. However, because of federal budget restrictions, NASA found it necessary to defer funding for this project.

In its letter to NASA dated August 16, 1984, the NRC directed NASA to either request reinstatement of the "possess-but-not-operate" status for the two Plum Brook Reactors, or submit a revised dismantling plan and schedule. NASA responded in a letter dated October 29, 1984, stating that it intended to formally request return to the "possess-but-not-operate" licensing status. On July 26, 1985, NASA submitted applications and supporting documents to the Nuclear Regulatory Commission (NRC) for the "possess-but-not-operate" status. The PBRF (TR-3) License was issued January 28, 1987, and the MUR (TR-93) License was issued January 12, 1987. Both licenses were in effect for ten years.

Renewal applications for the PBRF License (TR-3) and the MUR License (R-93) were submitted to the NRC on November 4, 1996. The NRC issued renewals for both of these licenses, PBRF (TR-3) and the MUR (R-93) on May 19, 1998. Both of these Licenses were amended during 1999 to allow for the name change from NASA Lewis Research Center, to NASA Glenn Research Center. These licenses are in effect until NRC License termination following decommissioning.

During 1998, NASA renewed its intention to seek the necessary funding for decommissioning of the Plum Brook Reactor Site and to complete decommissioning in an expeditious manner. In support of this effort, NASA completed a Decommissioning Plan for the PBRF and submitted it to the NRC on December 12, 1999. Current plans call for all decommissioning activities to be completed by the end of CY 2007.

Since 1982, NASA has continued to remove various uncontaminated tools, spare parts, and experimental hardware not required for maintaining protected safe storage or supporting future dismantling efforts. This is being done to make such items available to NASA and other Government agencies.

In addition to providing adequate resources and funding for past, present and future protected safe storage of the reactors, NASA funded an engineering study in 1984 to document the existing conditions at the site. The study was initiated near the end of CY 84, and major fieldwork began in early 1985. The purpose of the study was to gather data on the current condition of the facilities and equipment at the site, and to re-inventory the radioactive contamination at the end of the twelve-year radiological decay period since Reactor shutdown in January 1973.

NASA completed a review and update of this existing engineering study during 1998 in preparation for eventual decommissioning of the PBRF.

### 3. **Organization:**

The Plum Brook Management Office (PBMO) reports to the Engineering and Technical Services Directorate of the NASA Glenn Research Center, (GRC). This organization is in accordance with the Generic Organization Chart in the current (TR-3) and (R-93) licenses.

Mr. Henry G. Pfanner continues to serve as the Plum Brook Reactor Facility (PBRF) Engineer and is responsible for maintaining the protected safe storage mode of the reactors. The daily security, surveillance, and maintenance activities continue to be performed by an on-site support service contractor. However, the support service contractor was changed from Gilcrest Electric, GLCR, to the Plum Brook Operations Support Group, PBOSG, on April 1st, 2000. This change was a result of a competitive rebid for the Plum Brook support service contract. The day to day personnel performing the PBRF tasks and the level of services provided has not changed.

Mr. Keith Peacock continues to serve as the first alternate PBRF Engineer. Ms. Gayle Reid remains as the Radiation Safety Officer for the PBRF and also serves as an alternate PBRF Engineer.

Mr. Robert P. Kozar continues to serve as Chief of the Plum Brook Management Office (PBMO). The PBMO is responsible for the Level 2 Management of the PBRF. Mr. Keith Peecook remains as chairman of the PBRF Safety Committee; there were two PBRF safety committee meetings conducted during 2000.

4. **Condition of Systems and Components:**

The condition of all systems and components vital to maintaining safe protected storage has been carefully reviewed. All systems are performing satisfactorily.

5. **Security and Surveillance Measures:**

Security inspections are conducted at the PBRF twice daily and a security guard inspects each of the major buildings once each day. In addition, other security checks, such as inspection of fences and locks, are conducted monthly. Surveillance of operating systems and components, absolute filters, and radiological surveys are performed as specified in the PBRF Procedures Manual. Surveillance inspections are performed for some non-operating systems and components to assure that the protected safe storage conditions are maintained.

All of the security and surveillance inspections are accomplished by use of Inspection and Test Report (ITR) check sheets to insure they are promptly and properly completed. Completed ITR's are reviewed and approved by the PBRF Engineer and/or alternate and filed in the PBRF Vital Records. ITR's indicating that corrective action be taken is the responsibility of the PBRF Engineer.

Equipment Maintenance Records (EMR's) are utilized to document maintenance on vital components, equipment, systems and facilities which are not otherwise covered under the routine ITR system (see Section 8).

Personnel access to areas of the reactor site with significant known or suspected levels of radiation is controlled under a Safe Work Permit (SWP) system.

A total of 14 SWP's were issued during 2000, and all personnel exposures were well within permissible limits of 10 CFR 20. A statistical breakdown of the exposure levels as per 10 CFR 20.407 follows:



Estimated Whole Body  
Exposure Range (REM's)

\*Number of Individuals  
in Each Range

|                                   |    |
|-----------------------------------|----|
| No Measurable Exposure            | 52 |
| Measurable Exposure Less than 0.1 | 20 |
| 0.1 to 0.25                       | 0  |
| 0.25 and above                    | 0  |

\* These numbers include all employees having access and assignments in the PBRF.

The security and surveillance program in effect at the PBRF appears to be adequate to maintain the facilities in a protected safe storage mode.

**6. Facility Changes:**

A Facility Change (FC) System is utilized to provide documentation and approval of changes to existing facilities and structures, new structures, a physical change to equipment or system, or any change that alters a defined PBRF End-Condition statement. There were no new FC's initiated during 2000.

**7. Facility and Environmental Radiological Surveys:**

The 2000 monitoring data continued to include direct radiation, surface contamination, airborne and waterborne activity and stream silt. These parameters did not vary significantly from data obtained during the previous 27 years of standby or protected safe storage of the PBRF. All data indicates the radioactivity within PBRF is being safely contained.

**8. Maintenance Performed:**

All maintenance performed during the reporting period fell under the Equipment Maintenance Record (EMR) System.

The work covered under the EMR System involved routine maintenance and other minor repairs made to equipment within the Reactor complex. The on-site support service contractor who conducted the normal day-to-day maintenance and surveillance at the PBRF normally performed this work.

There were a total of 14 maintenance tasks completed in 2000 under the EMR System described.

**9. Audits and Inspections:**

Mr. Robert Corban continues to serve as chairman of the PBRF Audit Team. Mr. Timothy Gaydos and Mr. Gerald Carek remain as Audit Team members.

There was one audit conducted of PBRF activities for the CY 2000 by the GRC PBRF Audit Team. This audit was conducted on January 26, 2001 and there were no items of non-compliance.

There was one on-site, NRC Routine, Announced Safety Inspection, of the PBRF during 2000. Mr. Tom F. Dragoun of the USNRC Region I conducted this inspection, September 11-14, 2000. The Inspection Procedures used were: IP 40755 Class III Non-Power Reactors. Based on the results of this inspection, no safety concern or noncompliance to NRC requirements was identified.

**10. Unusual Occurrences:**

There were no unusual occurrences at the PBRF during 2000 which were reportable to USNRC under the criteria of 10 CFR 21.3, 10 CFR 21.4 and 10 CFR 50.72.

**11. License Status:**

The effective date of both the PBRF (TR-3) and the MUR (R-93) licenses is May 19, 1998. Both licenses are in effect until license termination by the NRC following decommissioning. Amendment #10 to the PBRF (TR-3) License was approved November 19, 1999. Amendment #6 to the Plum Brook Mock-Up Reactor was approved on June 23, 1999. Both of these amendments pertain to the recent name change of NASA Lewis Research Center to NASA Glenn Research Center. The U.S. Congress directed this name change during March 1999.

NASA completed a Decommissioning Plan for the PBRF and submitted it to the NRC on December 12, 1999.

## 12. Decommissioning

### Decommissioning Management

During 2000, NASA continued to increase staffing for the planning and preparation for the NASA Glenn Research Center's Decommissioning Project. The Decommissioning Project Manager, Mr. Timothy Polich, has expanded the NASA and NASA contractor staff for the Plum Brook Reactor Facility. Mr. Polich continues to be responsible for the PBRF Reactor Decommissioning Plan currently undergoing NRC review. Mr. Polich remains in the Office of Safety and Assurance Technologies (OSAT) at NASA Glenn Research Center. However, he now reports to a Program Manager at Glenn Research Center who reports to Mr. Vernon Wessel, Director of OSAT. Currently the Acting Program Manager is Mr. Frank Greco.

The other NASA positions added to the Decommissioning Project staff include a Senior Project Engineer, Mr. Keith Peacock; a Construction Manager, Mr. James Gaffney; and an Environmental Engineer, currently in process of selection.

NASA Contractor positions added to the Decommissioning Project staff include Site Radiation Safety Specialist, Mr. Robert Hysong; Safety and Health Specialist, Mr. Henry Bayes; Project Controls Specialist, Ms. Barbara Kennedy; Licensing Engineer, currently searching for a candidate; and Administrative Assistant, Ms. Julie Fuerstenberg.

### Decommissioning Plan

NASA received a request for additional information (RAI) from the NRC on December 28, 2000, regarding the Decommissioning Plan submitted to the NRC on December 20, 1999. NASA plans to respond to the RAI within the 90 days specified.

### Community Relations

NASA held a Community Information Session at a local College on October 17, 2000, to further disseminate information to the public. A Community Work Group consisting of local citizens has also been established. This group meets on a regular basis approximately quarterly. Meetings were held in February, May, and October of the year 2000.

### **Decommissioning Contractor**

In December 2000, NASA selected the US Army Corps of Engineers (USACE) as the prime contractor for the Decommissioning activities at PBRF. The USACE has a Total Environmental Restoration Contract (TERC) with Montgomery Watson; Montgomery Watson entered into an agreement with Duke Engineering & Services and the MOTA Corporation to provide nuclear reactor decommissioning expertise to the project.

### **13. Other:**

#### **Pre-Design Investigation Report**

NASA's Prime contractor, the USACE, completed a Pre-Design Investigation Report to evaluate decontamination techniques and estimates of disposal volumes. The Pre-Design Investigation provided data for the total scope estimate of the PBRF decommissioning and decontamination effort.

#### **Cost Estimate**

NASA contractor USACE completed a Baseline Schedule and Cost Estimate for the PBRF Decommissioning Project in November 2000. NASA is currently reviewing the estimate internally and has obtained a third party to independently review the estimate.

#### **Alternatives Study**

NASA performed a study during 1998 to update its knowledge base regarding final disposition of the Plum Brook reactors. The study included a review of the radiological data obtained during the 1985 Engineering Study, field verification of a representative sample of the 1985 radiological data, a review and update of NRC license termination criteria changes since 1985, and updated cost estimates for various decommissioning alternatives. Additional site characterization samples were taken during 1999 to provide a more thorough database to be used for Decommissioning planning purposes.

#### **Land Excessing**

The General Services Administration (GSA) continues to investigate the possible transfer of 604 acres of excessed property in the western area of Plum Brook Station to other government agencies. If this transfer occurs, the Station fence line will be modified to conform to the new Station perimeter. The nearest point

of property affected is approximately 5,000 feet from the fenced site of the PBRF. NASA will continue to control access to the total Station, as well as inspect, maintain and provide security surveillance for the existing or revised Plum Brook Station perimeter fence line. Conditions at the PBRF will be unaffected.