

National Aeronautics and
Space Administration
John H. Glenn Research Center
Lewis Field
Cleveland, OH 44135-3191



September 18, 2012

Reply to Attn: of: Q

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

Subject: Plum Brook Reactor Facility, Request for Termination of Licenses Nos. TR-3, Docket
No. 50-30 and R-93, Docket No. 50-185

The following request is affirmed under 28 USC Section 1746.

In accordance with 10 CFR 50.82(b)(6), this letter submits the National Aeronautics and Space Administration (NASA) request for the termination of the Plum Brook Reactor Facility License TR-3 and the NASA Mockup Reactor License R-93. NASA has completed all decommissioning activities specified in the NRC approved "Decommissioning Plan for the Plum Brook Reactor Facility", and has completed all terminal radiation surveys of the Reactor Facility and the associated NASA site as specified in the NRC approved "Final Status Survey Plan for the Plum Brook Reactor Facility". The terminal radiation surveys as reported in the "Plum Brook Reactor Facility Final Status Survey Report" demonstrate that the facility and surrounding areas meet the criteria for release for unrestricted use stipulated in 10 CFR 20.1402.

In addition, all receptor dose modeling and confirmatory radiological surveys have been completed to demonstrate compliance with Condition 4 of both Licenses which states, "Prior to termination of this license, NASA shall assess the residual activity in Plum Brook between the Plum Brook Station and Sandusky Bay and demonstrate that the area meets the radiological criteria for unrestricted use specified in 10 CFR 20.1402".

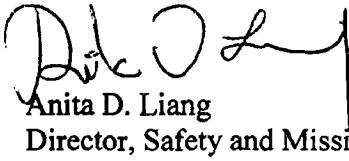
References to the supporting documentation submitted to the Nuclear Regulatory Commission are provided in the enclosures.

All radioactive materials, including calibration and check sources and other sealed sources, have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, subpart E and is As Low As Reasonably Achievable (ALARA).

FSME20

Should you have any questions or need additional information, please contact Mr. Peter Kolb at NASA Glenn Research Center, 21000 Brookpark Road, M.S. 3-11, Cleveland, Ohio, 44135, or by telephone at (216) 433-3103.

This License Termination Request is true and correct to the best of my knowledge and belief. I declare under penalty of perjury that the foregoing is true and correct and I executed this September 18, 2012.



Anita D. Liang
Director, Safety and Mission Assurance

Enclosure

cc:

USNRC/C. J. Glenn (FSME)

USNRC/J. Webb (FSME)

USNRC/J. Tapp RIII/DNMS/DB

USNRC/L. Rodriguez RIII/DNMS/DB

ODH/M. J. Rubadue

JUSTIFICATION FOR TERMINATION OF LICENSES

Title 10, Code of Federal Regulations Section 50.82(b)(6) states:

“The Commission will terminate the license if it determines that--

- (i) The decommissioning has been performed in accordance with the approved decommissioning plan, and*
- (ii) The terminal radiation survey and associated documentation demonstrate that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.”*

The following actions have been completed:

- I** The National Aeronautics and Space Administration (NASA) submitted the proposed “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 0, dated December 1999, to the U. S. Nuclear Regulatory Commission (USNRC) for approval by letter dated December 20, 1999 (ML993630054).

The Decommissioning Plan was revised to incorporate NASA responses to NRC Staff comments and Requests for Additional Information (RAI).

On March 21, 2000, the USNRC issued the “Plum Brook Reactor and Plum Brook Reactor Mock-Up Reactor Environmental Assessment and Finding of No Significant Environmental Impact” (ML003690089) addressing the proposed facility decommissioning. This Environmental Assessment was published in the Federal Register March 28, 2000 (65 FR 16241).

On March 20, 2002, the USNRC formally approved the “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 2, dated October 2001, by issuance of Amendment 11 to License TR-3 and Amendment 7 to License R-93 (ML020390069). The amended licenses authorized decommissioning of the Plum Brook Reactor Facility in accordance with Decommissioning Plan and included provisions for future revisions to the Decommissioning Plan without NRC approval or License Amendment provided certain criteria were met regarding the nature of the revisions.

As Decommissioning progressed, additional revisions were made to the Decommissioning Plan. These follow-on revisions were evaluated under the provisions of the Licenses and as specified in section 9 of the Decommissioning Plan as neither requiring approval by the USNRC nor requiring an Amendment to the Licenses. The following revisions were implemented and submitted to the NRC Staff for information:

- “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 3, dated May 27, 2004, was submitted by letter dated June 23, 2004 (ML041840466).

- “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 4, dated April 26, 2005, was submitted by letter dated April 27, 2005 (ML051190339).
- “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 5, dated December 2, 2005, was submitted by letter dated December 5, 2005 (ML053420467).
- “Decommissioning Plan for the Plum Brook Reactor Facility”, Revision 6, dated July 22, 2008, was submitted by letter dated July 23, 2008 (ML082070086).

The Decommissioning activities have been completed as specified in the Decommissioning Plan. All radioactive material has been removed to a level that will permit release of the site for unrestricted use as specified in the criteria in 10 CFR 20, subpart E, and is ALARA. All structures, systems, and components have been removed or decontaminated, all sealed sources have been removed by either disposal at a licensed facility or transfer to another licensee, all radioactive waste has been transported for off-site disposal, all structures have either been decontaminated or demolished to an elevation of at least one meter below final grade, and, the site has been graded and contoured to its natural grade.

II During the decommissioning program, NASA performed a radiological scoping survey of the Plum Brook stream bed and in environmental areas along banks of Plum Brook. The scoping surveys determined that there were very low levels of detectable radionuclides present in some areas of the stream bed and along the stream banks. Based on the radionuclide mixture present, NASA determined that this material was the result of reactor facility operations. NASA retained the services of a local environmental consulting firm and performed a detailed radiological study of the off-site environmental area along the discharge flow path between Plum Brook Station and Sandusky Bay. The following table lists the reports of this study submitted to the USNRC with the NRC ADAMS System Accession Numbers for the reports and submittal letters:

Table 1: Summary of Plum Brook Environmental Study Report Submittals

<u>Report Title</u>	<u>Rev No.</u>	<u>Report Date</u>	<u>ADAMS Accession Number</u>	<u>Submittal Letter Date</u>	<u>Submittal Letter Accession No.</u>
Characterization Report for Plum Brook Sediment in East Sandusky Bay	Rev 0	Apr 16, 2007	ML071270717	May 03, 2007	ML071270714
Characterization Report for Plum Brook Sediment in East Sandusky Bay	Rev 1	Jan 04, 2008	ML080080615	Jan 04, 2008	ML080080605
Characterization Report for Plum Brook Sediment in Ponds	Rev 0	Apr 17, 2007	ML071270723	May 03, 2007	ML071270714
Characterization Report for Plum Brook Sediment in Ponds	Rev 1	Jan 04, 2008	ML080080608	Jan 04, 2008	ML080080605
Development of Conceptual Model as Basis for Characterization Plan – Plum Brook Reactor Facility	Rev 0	Jun 06, 2007	ML071620294	Jun 07, 2007	ML071620127

<u>Report Title</u>	<u>Rev No.</u>	<u>Report Date</u>	<u>ADAMS Accession Number</u>	<u>Submittal Letter Date</u>	<u>Submittal Letter Accession No.</u>
Development of Conceptual Model as Basis for Characterization Plan- Plum Brook Reactor Facility	Rev 1	Jan 04, 2008	ML080080613	Jan 04, 2008	ML080080605
Characterization Report for Sediment in Groundwater Wells Near the Plum Brook Reactor Facility	Rev 0	Jan 21, 2008	ML080280060	Jan 23, 2008	ML080280060
Characterization Report for Plum Brook Sediment in Stream Mouth Wetlands	Rev 0	Feb 08, 2008	ML080450300 ML080450276	Feb 11, 2008	ML080450274
Characterization Report for Plum Brook Sediment in Stream Mouth Wetlands	Rev 1	Apr 02, 2008	ML081130326 ML081120073	Apr 10, 2008	ML081120072
Characterization Report for Plum Brook Sediment in Flood Plain Wetlands	Rev 0	Mar 18, 2008	ML081410649 ML081410650	May 15, 2008	ML081410648

NASA performed a detailed assessment of the dose consequences of the sediment contamination in Plum Brook environmental areas and documented the assessment in two Technical Basis Documents. PBRF-TBD-07-005, revision 0, "Assessment of Radiation Exposures from Plum Brook Sediments Contaminated with Cesium-137", was submitted for information to the NRC Staff by letter dated June 27, 2008. PBRF-TBD-08-001, revision 0, "Assessment of Age Dependent Dose from Plum Brook Sediments", was submitted to the NRC Staff by letter dated August 7, 2008 (ML082330186).

A public meeting was convened on September 3, 2008 where the NASA and NRC Staff openly discussed a dose modeling approach to assessing the radioactive contamination in Plum Brook, rather than performance of a MARSSIM based approach to Final Status Survey. Minutes of this meeting were published by the NRC Staff (ML082900916).

As a result of the public meeting, NASA committed to further refine the two previous dose assessments and resubmit in a single document and to initiate a license amendment request that would incorporate a license condition to assure complete evaluation of the residual contamination and its effects prior to terminating the NRC Licenses for the facility.

NASA submitted the "Plum Brook Sediment Characterization Data Report – October 2008", by letter dated October 10, 2008 (ML090641013). It was followed by License Amendment application for licenses TR-3 and R-93 to incorporate a License Condition requiring an assessment of the residual activity in Plum Brook prior to termination of the licenses. The amendment request was submitted by letter dated January 9, 2009 (ML090140338).

The NASA letter dated March 20, 2009 (ML090900439) submitted Technical Basis Document PBRF-TBD-08-006, "Revised Dose Assessment for Plum Brook Sediments", revision 0, dated March 18, 2009 (ML090900750), and Technical Basis Document PBRF-TBD-08-005, "Radiological Characterization of Plum Brook Sediments", revision 1, dated March 19, 2009 (ML090900748). The first document provided the refinement of the previous dose models and consolidated them into a single document. The second document provided the final characterization study technical details.

The NRC Staff issued a Request for Additional Information by letter dated June 11, 2009 (ML091520480) regarding NASA's January 9, 2009 License Amendment application and March 20, 2009 submittal of documents. NASA provided a formal response to the RAI by letter dated October 6, 2009 (ML092870784).

The NRC issued the requested license amendments by letter dated February 1, 2010 (ML100120679) that included the Staff Safety Evaluation Report. Amendment 14 to License TR-3 (ML100130129) and Amendment 10 to License R-93 (ML100130131) incorporated Condition 4 into both licenses that states, "Prior to termination of this license, NASA shall assess the residual activity in Plum Brook between the Plum Brook Station and Sandusky Bay and demonstrate that the area meets the radiological criteria for unrestricted use specified in 10 CFR 20.1402".

The NRC Safety Evaluation Report stated in part, "*The licensee approached the dose assessment of the Plum Brook sediments using several approaches that can be considered ALARA. The licensee used four different dose assessments that are representative of the geographical area. The staff has determined that the licensee applied these alternative pathways to capture reasonable activities that may take place near the Plum Brook. Although contaminants were detected at various depths within the sedimentation of the Pentolite Ditch and the Plum Brook, the licensee used appropriate values for the area and thickness in assessing the radiation dose from Plum Brook sediments. In addition to these appropriate values, the licensee used the highest or most conservative concentration for Cs-137 and Co-60 for each of the dose scenarios. This resulted in dose calculations that were still substantially below the regulatory limit of 25 mrem per year for the critical group. In addition, the licensee intends to further reduce the potential dose from radionuclides of PBRF origin in the Plum Brook by digging up isolated hot spots in sediment along the Plum Brook that has an activity above 13.34 pCi/g using hand tools. This activity level corresponds to the same level used upstream in the remediation of the Pentolite Ditch. This remediation will cover the area of the Plum Brook from the Plum Brook station fence-line to the wetlands, and the remediation will be performed during the summer, when the flow rate in the Plum Brook is typically lower and a larger area of stream bank is exposed. In areas of the Plum Brook previously covered by characterization surveys, the locations to be remediated will be based on known GPS coordinates of elevated readings. In the areas that were not previously surveyed (e.g., stream section 2), a 100 percent survey of the bank area will be performed using the same detector that was used during the previous characterization (i.e., Ludlum Model 2350-1 with 44-10 sodium iodide detector, and a gamma-spectrum window set to focus of Cs-137 activity) or an equivalent.*"

NASA committed to perform additional radiological characterization of Plum Brook Section 2 sediments. This commitment was reflected in the NRC Staff Safety Evaluation supporting NRC issuance of Amendment 14 to License TR-3 and Amendment 10 to License R-93 on February 1, 2010 (ML100120679). The surveys were performed during July and August of 2010. The results were reported in Technical Basis Document PBRF-TBD-10-001, "Supplemental Radiological Characterization of Plum Brook Section 2", revision 0,

dated November 10, 2010. The report was submitted to the NRC by cover letter dated November 12, 2010 (ML103190708).

In order to assure that the ALARA criterion of 10 CFR 20, subpart E was met, NASA implemented a Work Execution Package (PBRF-WEP-10-007, "Plum Brook Remediation", revision 0, dated July 12, 2010, to perform the additional remediation described in the NRC Staff Safety Evaluation Report. Remediation activities, which were periodically observed and evaluated by NRC Region III Inspection Staff and representatives from the Ohio Department of Health, continued until September 13, 2010 when the Work Execution Package was closed. Localized spots of elevated activity were removed using basic hand tools. The soil and sediments were placed in 55-gallon drums and transported to a staging area at the reactor facility. The contaminated soil and sediments were packaged with other waste materials for off-site disposal as Radioactive Waste.

Based on the previous discussion, NASA has met the requirements of Condition 4 of Licenses TR-3 and R-93. NASA has assessed the residual activity in Plum Brook and the environmental areas along the banks of Plum Brook between the Plum Brook Station fence and Sandusky Bay. The assessment and follow-up remediation has satisfactorily demonstrated that the residual activity is within the limits for release for unrestricted use specified in 10 CFR 20, subpart E and is ALARA.

III By letter dated October 27, 1976, NASA requested an amendment to Possession Only Licenses TR-3 and R-93 that would remove the Assembly Test and Storage (ATS) Building, the Reactor Office Building (ROB), the ATS Water Storage Tank, and the grounds adjacent to these structures from the Plum Brook Reactor Facility and the control of the Licenses allowing NASA to use the structures and grounds for other purposes. A letter of clarification dated October 27, 1976 from NASA to the NRC stated that when the previously noted structures were removed from the Facility License control, the Reactor Facility fence would be relocated so that these structures would no longer be within the fenced facility.

The NRC Issued Amendment 6 to License TR-3 by letter dated December 17, 1976. The amendment allowed revisions to the Technical Specifications and allowed removal of the listed structures and grounds from the licensed area after isolation of the structures from Reactor Facility systems and demonstration that the structures and grounds were free of licensed material. The NRC followed with a letter dated February 3, 1977 that provided guidance on the decontamination and survey requirements necessary to release the subject areas for unrestricted use.

By letter dated January 7, 1981, NASA reported to the NRC Staff that the required isolation of the subject facilities had been completed and decontamination and release surveys had been completed. The letter included the Final Radiological Survey for Release of Buildings 1121, 1142, and Structure 1156 at the Plum Brook Reactor Facility, dated November 28, 1980. NASA stated "We believe that the survey results confirm the absence of reactor-originated radioactive material in excess of the limits specified in Amendment No. 6. In accordance with recent telephone conversations with your office, we plan to consider the

isolated area free from all Nuclear Regulatory Commission license constraints 30 days from the date of this letter”.

Based on the foregoing, NASA has demonstrated that those areas of the original Reactor Facility that were removed from control of the Licenses prior to commencement of the decommissioning project and were not addressed in the NRC approved Decommissioning Plan have been appropriately remediated with termination surveys that demonstrate adequate decontamination to a level acceptable to the NRC Staff and the staff regulatory guidance available at the time of completion.

IV NASA submitted a request for amendment to Licenses TR-3 and R-93 by letter dated December 17, 2004 (ML050470053). The letter requested that the licenses be amended to incorporate the submitted Final Status Survey Plan as a supplement to the Safety Analysis Report and allow performance of Final Status Surveys. The existing Condition 3.A.3 of both licenses required that Licensee submit reports of any characterization surveys that were not part of the original decommissioning application and to submit the Final Status Survey Plan to the USNRC for review prior to performing Final Status Surveys. The letter included the “Supplemental Characterization Report for the Plum Brook Reactor Facility”, dated December 16, 2004 (ML050470048), and the “Final Status Survey Plan for the Plum Brook Reactor Facility”, revision 0, dated December 3, 2004 (ML050690309 and ML050690310) in fulfillment of License Condition 3.A.3.

NASA submitted a request for amendment to Licenses TR-3 and R-93 by letter dated May 18, 2005 (ML051430356). The amendments consisted of revised Technical Specifications for both licenses. This was supplemented by a letter dated July 11, 2005 notifying the NRC that the decommissioning schedule would extend beyond the original date of December 31, 2007 to December 31, 2010 (ML051940437).

The License Amendment request was revised by NASA letter dated May 12, 2006, “Submittal of Revised Final Status Survey Plan and Revised Request for Amendment of Licenses TR-3 and R-93” (ML061390292). The application included “Final Status Survey Plan for the Plum Brook Reactor Facility”, revision 0, dated May 2006 (ML061390295 and ML061390297). The revision to the Plan was based on additional characterization data obtained since the previous submittal.

NASA revised the previous amendment request again by letter dated January 10, 2007 (ML070170174). This revision requested incorporation of changes to the Project Organization described in the Technical Specifications.

NASA submitted a revision to the proposed Final Status Survey Plan by letter dated February 9, 2007 (ML070450166). The “Final Status Survey Plan for the Plum Brook Reactor Facility”, revision 1, dated February 2007 (ML070450170 and ML070450171) was based on an expanded section 5.3 with a more detailed discussion of the Background Reference Areas.

The USNRC issued Amend 13 to License TR-3 and Amendment 9 to License R-93 by letter dated March 24, 2008 (ML073020308) and included a Staff Safety Evaluation Report (ML073020316). The amendments incorporated revised Technical Specifications (ML073100974), Amendment 13 to License TR-3 (ML073100892), and Amendment 9 to License R-93 (ML073100897). The amendments approved the Final Status Survey Plan and authorized performance of Final Status Surveys with the following section:

“ 3. *NASA is authorized to decommission the facility in accordance with the Decommissioning Plan for the Plum Brook Reactor Facility approved by the Commission by issuance of license amendment dated March 20, 2002, as revised pursuant to paragraph 3.A.1 below, and to perform Final Status Surveys in accordance with the Final Status Survey Plan for the Plum Brook Reactor Facility submitted by letters dated May 12, 2006 and February 9, 2007 and revised pursuant to paragraph 3.A.1 below.*

A. This amendment authorizes inclusion of the Decommissioning Plan for the Plum Brook Reactor Facility and the Final Status Survey Plan for the Plum Brook Reactor Facility and their supplements as supplements to the Safety Analysis Report pursuant to 10 CFR 50.82(b)(5).

1. The licensee may make changes to the above plans and revisions without prior U.S. Nuclear Regulatory Commission approval provided the proposed changes do not:

- a. Require Commission approval pursuant to 10 CFR 50.59;*
- b. Reduce the coverage requirements for scan measurements;*
- c. Increase the derived concentration guideline level and related minimum detectable concentrations (for both scan and fixed measurement methods);*
- d. Use a statistical test other than the Sign test or the Wilcoxon Rank Sum test for evaluation of the final status survey;*
- e. Result in significant environmental impacts not previously reviewed;*
- f. Increase the radioactivity level, relative to the applicable derived concentration guideline level, at which an investigation occurs;*
- g. Increase the Type I decision error;*
- h. Decrease an area classification (i.e., impacted to unimpacted; Class 1 to Class 2; Class 2 to Class 3; Class 1 to Class 3).”*

Following issuance of the above license amendments, NASA began performing the terminal radiation surveys in accordance with the NRC approved Final Status Survey Plan for the Plum Brook Reactor Facility, revision 1 dated February 2007. Survey results were documented in the Final Status Survey Report which consisted of eighteen attachments which reported the survey results and evaluations of the results against the License Termination criteria. Each attachment addressed a specific area of the facility. The final section of the report was Report Main Body which summarized the results of the eighteen attachments and presented the basis for NASA's conclusions that the facility had been remediated to a level that would permit release for unrestricted use.

In addition to the above, NASA assessed the dose from residual contamination in ground water in Technical Basis Document PBRF-TBD-12-001, "Evaluation of Radionuclides in PBRF Groundwater and Surface Water", revision 0, dated March 14, 2012 (ML121160080). This document was submitted to the USNRC electronically on April 23, 2011.

The following table lists the reports of the Final Status Surveys submitted to the USNRC with the NRC ADAMS System Accession Numbers for the reports and submittal letters:

Table 2: Summary of Final Status Survey Report Submittals

<i>Final Status Survey Report Section Title, Date, Revision Number</i>	<i>Date of Submittal to NRC</i>	<i>NRC ADAMS ACCESSION NUMBERS</i>	
Final Status Survey Report, Report Main Body, Revision 0, dated March 30, 2012.	March 30, 2012	Transmittal Letter	ML12095A156
		Report Body	ML12095A156
Final Status Survey Report, Attachment 1, Reactor Office Laboratory Building, Revision 0, dated March 25, 2010.	March 25, 2010	Transmittal Letter	ML100880265
		Report Body	ML100880265
		Report Appendices	ML100880265
Final Status Survey Report, Attachment 1, Reactor Office Laboratory Building, Revision 1, dated October 25, 2010 (<i>Revision 1 in response to NRC Staff Comments dated 10/27/10</i>).	October 28, 2010	Transmittal Letter	ML103060324
		Report Body	ML103060323
		Report Appendices	ML103060323
Final Status Survey Report, Attachment 2, Services Equipment Building, Revision 0, dated May 4, 2010.	May 4, 2010	Transmittal Letter	ML101270331
		Report Body & Appendix A	ML101270329
		Appendix B	ML101270332
Final Status Survey Report, Attachment 2, Services Equipment Building, Revision 1, dated October 25, 2010 (<i>Revision 1 in response to NRC Staff Comments dated 10/27/10</i>).	October 28, 2010	Transmittal Letter	ML103060324
		Report Body & Appendix A	ML103060331
		Appendix B	ML103080859
Final Status Survey Report, Attachment 3, Fan House, Revision 0, dated May 26, 2010.	May 27, 2010	Transmittal Letter	ML102030280
		Report Body	ML102030280
		Report Appendices	ML102030280
Final Status Survey Report, Attachment 3, Fan House, Revision 1, dated October 25, 2010 (<i>Revision 1 in response to NRC Staff Comments dated 10/27/10</i>).	October 28, 2010	Transmittal Letter	ML103060324
		Report Body	ML103060333
		Report Appendices	ML103060333
Final Status Survey Report, Attachment 4, Pentolite Ditch, Revision 0, dated August 25, 2010.	August 26, 2010	Transmittal Letter	ML102390408
		Report Body	ML102390408
		Report Appendices	ML102390408
Final Status Survey Report, Attachment 5, Hot Retention Area, Revision 0, dated May 19, 2010.	May 27, 2010	Transmittal Letter	ML102030279
		Report Body	ML102030279
		Report Appendices	ML102030279

Final Status Survey Report Section Title, Date, Revision Number	Date of Submittal to NRC	NRC ADAMS ACCESSION NUMBERS	
Final Status Survey Report, Attachment 5, Hot Retention Area, Revision 1, dated October 25, 2010 (<i>Revision 1 in response to NRC Staff Comments dated 10/27/10</i>).	October 28, 2010	Transmittal Letter	ML103060324
		Report Body	ML103060329
		Report Appendices	ML103060329
Final Status Survey Report, Attachment 6, Waste Handling Building, Revision 0, dated September 13, 2010.	September 13, 2010	Transmittal Letter	ML102580334
		Report Body	ML102580334
		Report Appendices	ML102580334
Final Status Survey Report, Attachment 6, Waste Handling Building, Revision 1, dated October 25, 2010 (<i>revision 1 in response to NRC Staff Comments dated 10/27/10</i>).	October 28, 2010	Transmittal Letter	ML103060324
		Report Body	ML103060328
		Report Appendices	ML103060328
Final Status Survey Report, Attachment 7, Storm Drains, Pipe Trenches & Other Sub-Surface Excavations, Revision 0, dated March 10, 2011.	March 11, 2011	Transmittal Letter	ML110740227
		Report Body	ML110740227
		Report Appendices	ML110740227
Final Status Survey Report, Attachment 7, Storm Drains, Pipe Trenches & Other Sub-Surface Excavations, Revision 1, dated April 3, 2012 (<i>Revision 1 in response to NRC Staff Comments dated 12/22/11</i>).	April 5, 2012	Transmittal Letter	ML12100A123
		Report Body & Appendix A	ML12100A124
		Appendices B & C	ML12100A126
Final Status Survey Report, Attachment 8, Hot Laboratory, Revision 0, dated July 18, 2011.	July 19, 2011	Transmittal Letter	ML11203A360
		Report Body & Appendix A	ML11203A361
		Report Appendix B, pages 1 - 68	ML11203A355
		Appendix B, pages 69 - 147, Appendix C	ML11203A357
Final Status Survey Report, Attachment 8, Hot Laboratory, Revision 1, dated April 3, 2012 (<i>Revision 1 in response to NRC Staff Comments dated 12/22/11</i>).	April 5, 2012	Transmittal Letter	ML12100A123
		Report Body & Appendix A	ML12100A129
		Appendix B, pages 1-100	ML12100A130
		Appendix B, pages 101-147, Appendices C & D	ML12100A125
Final Status Survey Report, Attachment 9, Embedded Piping, Revision 0, dated October 6, 2011.	October 7, 2011	Transmittal Letter	ML11286A071
		Report Body	ML11286A071
		Report Appendices	ML11286A071
Final Status Survey Report, Attachment 9, Embedded Piping, Revision 1, dated April 3, 2012 (<i>Revision 1 in response to NRC Staff Comments dated 12/22/11</i>).	April 5, 2012	Transmittal Letter	ML12100A123
		Report Body	ML12100A127
		Report Appendices	ML12100A127

Final Status Survey Report Section Title, Date, Revision Number	Date of Submittal to NRC	NRC ADAMS ACCESSION NUMBERS	
Final Status Survey Report, Attachment 10, Emergency Retention Basin, Revision 0, dated August 29, 2011.	August 29, 2011	Transmittal Letter	ML11243A183
		Report Body	ML11243A183
		Report Appendices	ML11243A183
Final Status Survey Report, Attachment 11, Reactor Containment Vessel, Revision 0, dated September 25, 2011.	September 15, 2011	Transmittal Letter	ML11262A287
		Report Body & Appendix A	ML11262A285
		Appendix B	ML11262A286
Final Status Survey Report, Attachment 12, Reactor Building, Revision 0, dated January 24, 2012.	January 25, 2012	Transmittal Letter	ML12030A231
		Report Body & Appendix A	ML12030A229
		Appendices B, pages 1 - 93	ML12030A230
		Appendix B, pages 94 - 150, Appendices C and D	ML12030A232
Final Status Survey Report, Attachment 13, Primary Pump House, Revision 0, dated August 11, 2011.	August 11, 2011	Transmittal Letter	ML11228A024
		Report Body	ML11228A024
		Report Appendices	ML11228A024
Final Status Survey Report, Attachment 13, Primary Pump House, Revision 1, dated January 4, 2012 (Revision 1 in response to NRC Staff Comments dated 12/22/11).	January 18, 2012	Transmittal Letter	ML12020A100
		Report Body & Appendix A	ML12020A096
		Appendix B	ML12020A097
Final Status Survey Report, Attachment 14, Transport Roadways and Parking Lots, Revision 0, dated March 6, 2012.	March 6, 2012	Transmittal Letter	ML12068A261
		Report Body	ML12068A261
		Report Appendices	ML12068A261
Final Status Survey Report, Attachment 15, Miscellaneous Structures and Pads, Revision 0, dated January 19, 2012.	January 23, 2012	Transmittal Letter	ML12025A128
		Report Body & Appendix A, pages 1 - 15	ML12025A126
		Appendix A, pages 16 - 27, Appendices B & C	ML12025A127
Final Status Survey Report, Attachment 16, Open Land Areas within Restricted Area and Outside Buffer Area, Revision 0, dated February 23, 2012.	February 23, 2012	Transmittal Letter	ML12065A214
		Report Body	ML12065A334
		Report Appendices	ML12065A334
Final Status Survey Report, Attachment 17, Buried and Miscellaneous Piping, Revision 0, dated March 29, 2012.	March 29, 2012	Transmittal Letter	ML12090A600
		Report Body	ML12090A600
		Report Appendices	ML12090A600
Final Status Survey Report, Attachment 17, Buried and Miscellaneous Piping, Revision 1, dated July 16, 2012 (Revision 1 in response to NRC Staff Comments dated 05/01/12).	July 13, 2012	Transmittal Letter	ML12201A111
		Report Body	ML12201A111
		Report Appendices	ML12201A111

<i>Final Status Survey Report Section Title, Date, Revision Number</i>	<i>Date of Submittal to NRC</i>	<i>NRC ADAMS ACCESSION NUMBERS</i>	
Final Status Survey Report, Attachment 18, Excavated and Backfill Materials, Revision 0, dated February 23, 2012.	February 23, 2012	Transmittal Letter	ML12059A333
		Report Body	ML12059A365
		Report Appendices	ML12059A365

Each of the Final Status Survey Report sections included a discussion providing a technical justification and basis that remediation of each affected area had been performed to a level that is As Low As Reasonably Achievable.

Based on the documentation listed above, National Aeronautics and Space Administration has completed the terminal radiation surveys and submitted the associated documentation for NRC review. The survey documents support our conclusion that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E. The site should be considered acceptable for unrestricted use. NASA has demonstrated that the residual radioactivity that is distinguishable from background radiation results in a Total Effective Dose Equivalent to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

The foregoing discussion describes the actions taken by National Aeronautics and Space Administration to remediate and decommission the Plum Brook Reactor Facility. The actions taken have successfully achieved the license termination goals and the reports submitted to the NRC Staff provide documentary evidence that the facility and surrounding areas meet the criteria for release for unrestricted use stipulated in 10 CFR 20.1402. All associated license conditions necessary to terminate the licenses have been satisfied.

All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, subpart E and is As Low As Reasonably Achievable (ALARA). All licensed materials have been disposed at or transferred to appropriately licensed facilities in accordance with the NRC regulatory requirements.