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

May 12, 2006

Reply to Attn of: Q

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

Subject: Plum Brook Reactor Facility, Submittal of Revised Final Status Survey Plan and Revised Request for Amendment to 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.

The proposed Final Status Survey Plan and a request for amendment to Licenses TR-3 and R-93 incorporating the Final Status Survey Plan as a supplement to the Safety Analysis Report and allow performance of Final Status Surveys, was submitted by letter dated December 17, 2004.

This letter supplements that request for amendment by submitting a revised proposed Final Status Survey Plan. The revised plan is based on additional radiological characterization data obtained since submittal of the previous plan. Analysis of the additional characterization data revealed the need to revise the plan to reflect differences in the ratios of the mixtures of radionuclides of interest, account for variability in the radionuclide mixtures, and to correct the dose modeling calculations for embedded and buried piping by accounting for actual concrete thicknesses, pipe wall thicknesses, and placement of grout in the piping. There are no changes to the overall approach to performing the Final Status Survey and no changes to the overall dose modeling methodology, but the revisions do result in changes to the proposed Derived Concentration Guideline Levels (DCGL's) for embedded piping presented in the previous plan.

The proposed wording for amended Licenses TR-3 and R-93 is revised to reflect this second submittal and to reflect Amendments 12 and 8 respectively that were issued April 21, 2005.

This application has been reviewed pursuant to 10 CFR 50.91(a)(1) and an analysis supporting a determination of no significant hazards is included. It is unchanged from the previous submittal.

A020

Pursuant to 10 CFR 50.91(b), a copy of this license amendment application and supporting analysis, which indicates no significant hazards consideration is involved, have been provided to the designated representatives of the State of Ohio.

NASA requests that the amendment be made effective upon issuance.

Should you have any questions or need additional information, please contact Mr. Keith Peecook, NASA Plum Brook Station, 6100 Columbus Avenue, Sandusky, OH 44870, at (419) 621- 3277.

The enclosed License Amendment 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. Executed this 12th day of May 2006.

Vernon W. Wessel

Vernon W. Wessel
Director, Safety and Mission Assurance

Enclosures (4)
1. Description and Evaluation of the Proposed Changes
2. Proposed Amended License TR-3
3. Proposed Amended License R-93
4. Revised Final Status Survey Plan for the Plum Brook Reactor Facility

cc:
QD/F. J. Greco
QD/K. M. Peecook
USNRC/P. J. Isaac
USNRC/T. F. Dragoun
ODH/R. E. Owen
ODH/M. Snee

Enclosure 1
Description and Evaluation of the Proposed Changes

I. LICENSE AMENDMENT REQUEST

NASA requests that the Licenses TR-3 and R-93 be amended to reflect the incorporation of the Final Status Survey Plan for the Plum Brook Reactor Facility as a supplement to the Safety Analysis Report pursuant to 10 CFR 50.82(b)(5) and to allow commencement of the Final Status Survey.

II. REASONS FOR THE PROPOSED CHANGE

The current wording of Licenses TR-3 and R-93 requires submittal of the completed Final Status Survey Plan for review prior to performing the Final Status Survey. The proposed License amendment will reflect the fact that the Final Status Survey Plan has been submitted for review by the U.S. NRC and allow commencement of the Final Status Survey. In addition, the proposed amendment corrects a typographical error that appears in section 3.A.1.c of Licenses TR-3 and R-93. The Final Status Survey discussed as a 'preliminary plan' included within the Decommissioning Plan was based on early radiological characterization data and on hydro-geological data from past general area studies for the Plum Brook Station and the Sandusky, Ohio area. The Final Status Survey Plan included in this submittal is based on more extensive and more detailed radiological characterization studies performed since submittal of the original Decommissioning Plan. It includes data from areas of the facility that had not been studied in the previous characterization surveys, more extensive surveys of areas that had been previously studied, and includes dose pathway analyses using hydro-geologic data that is more specific to the Plum Brook Reactor Facility location. As a result, there have been changes to area classifications presented in the Decommissioning Plan and changes in the Derived Concentration Guideline Levels presented in the original Decommissioning Plan submittal. After U.S. NRC approval of the Final Status Survey Plan for the Plum Brook Reactor Facility, the Decommissioning Plan will be revised pursuant to paragraph 3.A.1 of License TR-3 and License R-93 that will remove the current discussions of Final Status Surveys and refer to the approved Final Status Survey Plan.

III DESCRIPTION OF THE PROPOSED CHANGES

A. Paragraph 2.A of License TR-3 is revised by changing the last sentence to read:

"The PBRF is described in the application for the full-term license dated January 10, 1964 and amendments thereto."

This proposed change eliminates the list amendment submittals and dates of submittals for amendments 5 through 11. This list is administrative in nature and elimination of the list will make the wording of the license consistent with the wording of License R-93 for the Mock-Up Reactor.

B. Paragraph 3 of Licenses TR-3 and R-93 is revised to read:

"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 as submitted by letters dated December 17, 2004, and May 15, 2006, and as subsequently revised pursuant to paragraph 3.A.1 below.

This proposed change will allow performance of the Final Status Survey. In addition, the word changes recognize that the Decommissioning Plan and Final Status Survey Plan may both be revised without prior NRC approval provided conditions in paragraph 3.A.1 are satisfied, and that activities may be performed in accordance with these plans as revised.

C. Paragraph 3.A of Licenses TR-3 and R-93 is revised to read:

"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 Final Safety Analysis Report pursuant to 10 CFR 50.82(b)(5)."

The current Licenses authorize inclusion of the Decommissioning Plan as a supplement to the Final Safety Analysis Report. This proposed change would add the Final Status Survey Plan as a supplement to the Final Safety Analysis Report.

D. Paragraph 3.A.1 of Licenses TR-3 and R-93 is revised to read:

"The licensee may make changes to the above plans and revisions without prior U.S. NRC approval provided the proposed changes do not:"

This proposed change changes the word 'plan' to 'plans', and would allow the licensee to make changes to the Final Status Survey Plan without prior U.S. NRC approval subject to the same criteria as currently applied to changes to the Decommissioning Plan.

E. Paragraph 3.A.1.c of Licenses TR-3 and R-93 is revised to read:

"increase the derived concentration guideline level and related minimum detectable concentrations (for both scan and fixed measurement methods);"

This proposed change revises the word 'fuel' to 'fixed' to correct a typographical error that appears in both License TR-3 and R-93.

F. Paragraph 3.A.3 of Licenses TR-3 and R-93 is revised to read:

"DELETED"

The Final Status Survey Plan required to be submitted by paragraph 3.A.3 of the current licenses has been included as part of this amendment request. In addition, characterization data necessary to support U.S. NRC approval of the Plan has been included as part of this submittal. Additional characterization data will be submitted as necessary to support future revisions to the Final Status Survey Plan as needed in accordance with proposed License Condition 3.A.1. Therefore, the terms of this License condition are no longer needed.

IV NO SIGNIFICANT HAZARDS CONSIDERATION

The proposed amendment to Licenses TR-3 and R-93 are necessary to achieve the objective of verifying that the facility has been radiologically remediated to level that would permit termination of the NRC Licenses. The proposed changes do not involve a significant hazard as shown in the following:

A. The proposed amendment to Licenses TR-3 and R-93 does not involve a significant increase in the probability or consequences of an accident previously analyzed.

The accident scenarios applicable to the decommissioning of the Plum Brook Reactor Facility are described in section 3.3 of the Decommissioning Plan for the Plum Brook Reactor. The Decommissioning Plan describes postulated events that could result in a release of radioactive materials from the site and analyzes the radiation dose consequences of these events and demonstrates that no adverse public health and safety impacts are expected from these events. Performance of Final Status Surveys in accordance with the U.S. NRC approved Final Status Survey Plan is a continuation of decommissioning and is an activity that involves measurements and analysis of residual radioactivity in areas in which decommissioning has been already been performed. It is a process used to confirm that radioactivity has been removed to achieve the acceptance criteria specified in 10 CFR 20, Subpart E. Since these survey activities will be performed in areas where other decommissioning activities are already complete, there is no credible event that could initiate the analyzed accidents. Further, these activities will be performed in areas where structures, systems, and components have been isolated or segregated from other parts of the facility where decommissioning activities are still in progress and will have no impact on these other decommissioning activities. Therefore, the proposed amendment will have no affect on the probability or consequences of accidents previously analyzed.

B. The proposed amendment to Licenses TR-3 and R-93 will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Accidents previously analyzed in the Decommissioning Plan assess different scenarios that could cause the dispersion of radioactive material to the environment. These scenarios arise from dismantlement activities associated with the decommissioning. These activities will continue as described in the Decommissioning Plan and will be accompanied by radiological survey activities done in accordance with the approved Final Status Survey Plan. The survey activities will introduce no new processes that could result in dispersion of radioactive material to the environment. The methods and processes used for control of work activities and for control and monitoring of radioactivity will remain the same as those used prior to this amendment. Therefore, no new or different types of accidents are created by this proposed amendment.

C. The proposed amendment to Licenses TR-3 and R-93 will not involve a significant reduction in a margin of safety.

As discussed previously, the activities that will be performed at the facility are as previously described and evaluated in the accident analyses presented in the Decommissioning Plan. The area classifications used in designing Final Status Surveys and the Derived Concentration Guideline Levels used for evaluating areas for release have been revised based on additional characterization survey data and additional hydro-geological data that were not available when the preliminary plan was presented in the Decommissioning Plan. Using the submitted Final Status Survey Plan, areas have been classified, surveys will be designed, and release limits will be calculated using the most current data, and using methodology that is consistent with the methodology previously applied. The radiological criteria to be used in applying for termination of the NRC Licenses will remain the same as originally proposed and are consistent with the criteria of 10 CFR 20 Subpart E. Therefore, the margins of safety applicable to assessing the long term dose to member of the public from exposure to the facility after termination of the license remain unchanged. In addition, since this amendment does not impact any previously reviewed accident analyses as previously discussed, no margins of safety are affected by this proposed amendment.

IV IMPLEMENTATION

NASA requests that the amendment become effective as of the date of issuance.

Enclosure 2

Proposed Amended License

TR-3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

DOCKET NO. 50-30

AMENDMENT TO FACILITY LICENSE

Amendment No. 7
License No. TR-3

1. The Nuclear Regulatory Commission (the Commission) has found that:

A. The application for amendment to Facility License No. TR-3, filed by the National Aeronautics and Space Administration (the licensee), dated July 26, 1985, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations as set forth in 10 CFR Chapter I;

B. The facility will be maintained in conformity with the amended license, the provisions of the Act, and the rules and regulations of the Commission;

C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

D. The National Aeronautics and Space Administration (NASA) is technically and financially qualified to engage in the activities authorized by the amended license in accordance with the rules and regulations of the Commission;

E. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;

F. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Facility License No. TR-3 is hereby amended in its entirety to read:

A. This license applies to the heterogeneous light-water cooled and moderated test reactor referred to as the Plum Brook Reactor Facility (hereinafter referred to as "the reactor" or "PBRF"). The PBRF includes all associated and site support facilities except for the Mock-Up Reactor (MUR) which is under separate License R-93, Docket No. 50-185. The PBRF is owned by National Aeronautics and Space Administration (NASA), an independent agency of the United States Government and located at the NASA Plum Brook Stations near Sandusky, Ohio. The PBRF is described in the application for the full-term license dated January 10, 1964, and amendments thereto. Amend. 11

3. NASA is authorized to decommission the facility in accordance the Decommissioning Plan for the Plum Brook Reactor Facility approved by issuance of 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 December 17, 2004, and May 15, 2006, and as subsequently revised pursuant to paragraph 3.A.1 below. Amend. 13

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 a supplement 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. NRC 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; Amend. 11

c. Increase the derived concentration guideline level and related minimum detectable concentrations (for both scan and fixed measurement methods); Amend. 13

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; Amend. 11

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).

2. The licensee shall provide the U.S. NRC notification of any changes to the planned decommissioning schedule that will extend the completion date of December 31, 2007. Amend. 11

3. DELETED Amend. 13

4. Before backfilling or performing actions that would otherwise render an area inaccessible for survey:

   a. The final status survey or the portion of the final status survey covering the affected area shall be performed.

   b. The completed final status survey for the affected area and a technical or safety justification demonstrating the need to perform the intended actions shall be submitted to the U.S. NRC. Amend. 12

   c. Concurrence that the proposed actions may be performed shall be received via telephone, email, or letter from the U.S. NRC.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the NASA Test Reactor:

1. Pursuant to Section 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, but not operate the reactor in accordance with the procedures and limitations described in the application and this license;

2. Pursuant to the Act and 10 CFR Part 30, "Rules and General Applicability to Domestic Licensing of Byproduct Material," and Part 70, "Domestic Licensing of Special Nuclear Material," to possess, but not to separate, such byproduct and special nuclear materials as may have been produced by operation of the facility.

3. Pursuant to the Act and 10 CFR Parts 30 and 40 to receive, possess and use in amounts as required any byproduct or source material without restriction to chemical or physical form for instrument and equipment calibration, associated with radioactive apparatus or components, or activities incident to "possess-do-not-operate" and decommissioning status. Amend 11

C. This license shall be deemed to contain and is subject to the conditions specified in Part 20, 30, 50, 51, 55, 70, and 73 of 10 CFR Chapter 1, to all applicable

provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect.

D. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 11, are hereby incorporated in the license. The licensee shall maintain the facility in accordance with the Technical Specifications. Amend 11

6. This license amendment is effective as of its date of issuance. Amend 9

FOR THE NUCLEAR REGULATORY COMMISSION

Frank J. Miraglia, Director
Division of PWR Licensing-B
Office of Nuclear Reactor Regulation

Attachment:
Appendix A Technical Specifications

Date of Issuance: January 28, 1987

Amendment 8

Seymore H. Weiss, Director
Non-Power Reactor, Decommissioning and
Environmental Project Directorate
Division of Reactor Projects – III, IV, V and
Special Projects
Office of Nuclear Reactor Regulation
November 30, 1989

Amendment 9

Seymore H. Weiss, Director
Non-Power Reactor, Decommissioning Project
Directorate
Division of Reactor Project Management
Office of Nuclear Reactor Regulation
May 19, 1998

Amendment 10

Marvin M. Mendonca, Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Programs
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
November 16, 1999

Amendment 11

Patrick M. Madden, Chief
Research and Test Reactors Section
Operating Reactor Improvement Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
March 20, 2002

Amendment 12

Patrick M. Madden, Chief
Research and Test Reactors Section
New, Research and Test Reactors Programs
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
April 21, 2005

Enclosure 3

Proposed Amended License

R-93

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

DOCKET NO. 50-185

AMENDMENT TO FACILITY LICENSE

Amendment No. 3
License No. R-93

1. The Nuclear Regulatory Commission (the Commission) has found that:

A. The application for amendment to Facility License No. R-93, filed by the National Aeronautics and Space Administration (the licensee), dated July 26, 1985, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations as set forth in 10 CFR Chapter I;

B. The facility will be maintained in conformity with the amended license, the provisions of the Act, and the rules and regulations of the Commission;

C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

D. The National Aeronautics and Space Administration (NASA) is technically and financially qualified to engage in the activities authorized by the amended license in accordance with the rules and regulations of the Commission;

E. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;

F. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Facility License No. R-93 is hereby amended in its entirety to read:

A. The license applies to the NASA Mockup Reactor (herein referred to as "the reactor") that is owned by NASA and located on the Plum Brook Station in Sandusky, Ohio, and described in the licensee's application dated December 20, 1999, as supplemented by letters dated March 26, November 19, and December 20, 2001, and January 24, 2002. Amend. 7

3. NASA is authorized to decommission the facility in accordance the Decommissioning Plan for the Plum Brook Reactor Facility approved by issuance of 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 December 17, 2004, and May 15, 2006, and as subsequently 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 a supplement to the Safety Analysis Report pursuant to 10 CFR 50.82(b)(5). Amend. 9

1. The licensee may make changes to the above plans and revisions without prior U.S. NRC 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; Amend. 7

c. Increase the derived concentration guideline level and related minimum detectable concentrations (for both scan and fixed measurement methods); Amend. 9

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; Amend. 7

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).

2. The licensee shall provide the U.S. NRC notification of any changes to the planned decommissioning schedule that will extend the completion date of

December 31, 2007.

3. DELETED. Amend. 9

4. Before backfilling or performing actions that would otherwise render an area inaccessible for survey:

   a. The final status survey or the portion of the final status survey covering the affected area shall be performed.

   b. The completed final status survey for the affected area and a technical or safety justification demonstrating the need to perform the intended actions shall be submitted to the U.S. NRC. Amend. 8

   c. Concurrence that the proposed actions may be performed shall be received via telephone, email, or letter from the U.S. NRC.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the NASA Test Reactor:

1. Pursuant to Section 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, but not operate the reactor in accordance with the procedures and limitations described in the application and this license;

2. Pursuant to the Act and 10 CFR Part 30, "Rules and General Applicability to Domestic Licensing of Byproduct Material," and Part 70, "Domestic Licensing of Special Nuclear Material," to possess, but not to separate, such byproduct and special nuclear materials as may have been produced by operation of the facility.

3. Pursuant to the Act and 10 CFR Parts 30 and 40 to receive, possess and use in amounts as required any byproduct or source material without restriction to chemical or physical form for instrument and equipment calibration, associated with radioactive apparatus or components, or activities incident to "possess-do-not-operate" and decommissioning status.

C. This license shall be deemed to contain and is subject to the conditions specified in Part 20, 30, 50, 51, 55, 70, and 73 of 10 CFR Chapter 1, to all applicable provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect. Amend. 7

D. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 7, are hereby incorporated in the license. The licensee shall maintain the facility in accordance with the Technical Specifications.

Amend. 7

FOR THE NUCLEAR REGULATORY COMMISSION

Frank J. Miraglia, Director
Division of PWR Licensing-B
Office of Nuclear Reactor Regulation

Attachment:
Appendix A Technical Specifications

Date of Issuance: January 12, 1987

Amendment 4

Seymore H. Weiss, Director
Non-Power Reactor, Decommissioning and
Environmental Project Directorate
Division of Reactor Projects – III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation
October 12, 1989

Amendment 5

Seymore H. Weiss, Director
Non-Power Reactors and Decommissioning
Project Directorate
Division of Reactor Project Management
Office of Nuclear Reactor Regulation
May 19, 1998

Amendment 6

Marvin M. Mendonca, Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Programs
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
November 16, 1999

Amendment 7

Patrick M. Madden, Chief
Research and Test Reactors Section
Operating Reactor Improvement Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
March 20, 2002

Amendment 8

Patrick M. Madden, Chief
Research and Test Reactors Section
New, Research and Test Reactors Programs
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
April 21, 2005