June 10, 2010

Mr. Michael J. Curley
Director of Risk, Compliance
and Nuclear Reactor
Worcester Polytechnic Institute
Research Reactor Facility
100 Institute Road
Worcester, MA 01609-2280

SUBJECT: AUTHORIZATION FOR LIMITED SHIPMENTS IN THE MODEL NO. BMI-1 PACKAGE, CERTIFICATE OF COMPLIANCE NO. 5957

Dear Mr. Curley:

As requested by your application dated May 13, 2010, as supplemented June 3, 2010, and pursuant to 10 CFR Part 71, Certificate of Compliance (CoC) No. 5957 for the Model No. BMI-1 package is amended to authorize the following limited shipments, subject to the conditions listed below.

1. Drawings

   (a) The container is constructed in accordance with Battelle Memorial Institute (BMI) Drawing Nos. 43-6704-0001, Rev. B; and 41-4409-0003, Rev. B.

   (b) Basket Assembly defined by BMI Drawing No. BCL-00-500, Rev. A, as modified by BMI Drawing Nos. 00-000-236, Rev. C, and BCL-00-502, Rev. B.

2. Contents

   (a) Type and form of material

   Intact irradiated MTR-type fuel assemblies containing not more than 240 grams U-235 per assembly prior to irradiation. Uranium may be enriched to a maximum 93.5 weight percent in the U-235 isotope. Active fuel length shall be approximately 25 inches.

   (b) Maximum quantity of material per package

   Up to twelve fuel assemblies contained in the basket assembly described in Condition No. 1.(b), above.

3. Shipment must be by truck and dedicated trailer specifically designed for shipment of BMI-1, as exclusive use shipment.

4. All shipments will be to University of Massachusetts Lowell, Research Reactor, in Lowell, MA.

5. Special package inspections are required before each use of the BMI-1. Replacement of sealing gaskets prior to each shipment are required, rather than every twelve months. A comprehensive inspection of all sealing gasket seating surfaces, and performance of the leak test to demonstrate the adequacy of the containment vessel, is required prior to each shipment. Leakage rate testing must be performed in accordance with Condition No. 15, of CoC No. 5957, Revision No. 28.

6. Each shipment must be escorted.

7. Authorization is for a maximum of three shipments, and expires August 11, 2010.

All other conditions of CoC No. 5957, Revision No. 28, remain the same. WPI has been issued a Quality Assurance Program Approval for Radioactive Material Packages No. 0946 under the provisions of 10 CFR Part 71.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/
Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-5957
TAC No. L24447

Enclosure: Safety Evaluation Report

cc w/encl: J. Shuler, Department of Energy
R. Boyle, Department of Transportation

4. All shipments will be to University of Massachusetts Lowell, Research Reactor, in Lowell, MA.

5. Special package inspections are required before each use of the BMI-1. Replacement of sealing gaskets prior to each shipment are required, rather than every twelve months. A comprehensive inspection of all sealing gasket seating surfaces, and performance of the leak test to demonstrate the adequacy of the containment vessel, is required prior to each shipment. Leakage rate testing must be performed in accordance with Condition No. 15, of CoC No. 5957, Revision No. 28.

6. Each shipment must be escorted.

8. Authorization is for a maximum of three shipments, and expires August 11, 2010.

All other conditions of CoC No. 5957 remain the same. WPI has been issued a Quality Assurance Program Approval for Radioactive Material Packages No. 0946 under the provisions of 10 CFR Part 71.

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SAFETY EVALUATION REPORT
DOCKET NO. 71-5957
MODEL NO. BMI-1 PACKAGE
WORCESTER POLYTECHNIC INSTITUTE

SUMMARY

By application dated May 13, 2010, as supplemented June 3, 2010, Worcester Polytechnic Institute (WPI) requested authorization to use the Model No. BMI-1 package beyond the package authorization expiration date of October 1, 2008.

Based on the statements and representations in the application, as supplemented, staff agrees that the extension of use of the package, with the additional conditions stated below, meets the requirements of 10 CFR Part 71.

BACKGROUND

NRC amended the regulations in 10 CFR Part 71, effective October 1, 2004, to be compatible with the 1996 edition of the International Atomic Energy Agency (IAEA), "Regulations for the Safe Transport of Radioactive Material" (TS-R-1, as amended in 2000). As a result, certain transportation packages that are compatible to the IAEA 1967 edition will no longer be authorized for use under the 10 CFR Part 71 general license after October 1, 2008.

EVALUATION

By application dated May 13, 2010, as supplemented June 3, 2010, WPI requested authorization to use the Model No. BMI-1 package beyond the package authorization expiration date of October 1, 2008. WPI provided the information as described in U.S. Nuclear Regulatory Commission, Regulatory Issue Summary 2008-18, “Information on Requests for Extending Use of Expiring Transportation Packages.”

(1) Package Information. WPI requested use of the Model No. BMI-1, package Serial No. 1. The contents are bounded by Condition No. 5.(b)(1)(xv) of Certificate of Compliance (CoC) No. 5957. Intact irradiated MTR-type fuel assemblies containing not more than 240 grams U-235 per assembly prior to irradiation. Uranium may be enriched to a maximum 93.5 weight percent in the U-235 isotope. Active fuel length shall be approximately 25 inches. Maximum quantity of material per package is as specified in CoC No. 5957. The application notes that the fuel is only slightly irradiated, and that the maximum dose rate at 30 cm from the fuel does not exceed 150 mr/hr.

(2) Identification of Shipment. WPI requested authorization for three shipments. The shipments will be from the WPI research reactor facility to the University of Massachusetts Lowell research reactor. The shipping mode is by truck and dedicated trailer specifically designed for shipment of the BMI-1, as exclusive use shipment.

(3) Reasons for Requesting Extended Use. WPI’s application states that extended use of the package is requested due to the availability, small scale and size of the package.

The design and fabrication of a replacement package has been completed for one package, however that package is not available for use by WPI in the timeframe required to support the facility decommissioning. WPI will have no further fuel shipments from their research reactor facility after completion of these three shipments.

(4) Safety Justification for Continued Use and Proposed Compensatory Measures. WPI proposed specific compensatory measures to assure that shipments would have equivalent safety. These include special package inspections required before use of BMI-1; sealing gaskets will be replaced prior to the shipment; sealing gasket seating surfaces will be inspected prior to the shipment. The shipment will be escorted. The overall distance for each shipment is approximately 50 miles. The purpose of these shipments is to remove all fuel from the WPI facility, permitting WPI to begin decommissioning of their research reactor facility.

(5) A Plan and Schedule to Acquire Replacement Packages or Complete Necessary Shipments. WPI will remove the fuel from their research reactor in these three shipments. WPI does not anticipate any additional future shipments in the Model No. BMI-1.

CONDITIONS

Based on the statements and representations in the application, as supplemented, authorization is given for the transport of Type B quantities of radioactive material by WPI, using the Model No. BMI-1 package with the following conditions:

1. Drawings

   (a) The container is constructed in accordance with Battelle Memorial Institute (BMI) Drawing Nos. 43-6704-0001, Rev. B; and 41-4409-0003, Rev. B.

   (b) Basket Assembly defined by BMI Drawing No. BCL-00-500, Rev. A, as modified by BMI Drawing Nos. 00-000-236, Rev. C, and BCL-00-502, Rev. B.

2. Contents

   (a) Type and form of material

   Intact irradiated MTR-type fuel assemblies containing not more than 240 grams U-235 per assembly prior to irradiation. Uranium may be enriched to a maximum 93.5 weight percent in the U-235 isotope. Active fuel length shall be approximately 25 inches.

   (b) Maximum quantity of material per package

   Up to twelve fuel assemblies contained in the basket assembly described in Condition No. 1.(b), above.

3. Shipment must be by truck and dedicated trailer specifically designed for shipment of BMI-1, as exclusive use shipment.

4. All shipments will be to University of Massachusetts Lowell, Research Reactor, in Lowell, MA.

5. Special package inspections are required before each use of the BMI-1. Replacement of sealing gaskets prior to each shipment are required, rather than every twelve months. A comprehensive inspection of all sealing gasket seating surfaces, and performance of the leak test to demonstrate the adequacy of the containment vessel, is required prior to each shipment. Leakage rate testing must be performed in accordance with Condition No. 15, of CoC No. 5957, Revision No. 28.

6. Each shipment must be escorted.

7. Authorization is for a maximum of three shipments, and expires August 11, 2010.

All other conditions of CoC No. 5957, Revision No. 28, remain the same.

CONCLUSIONS

Based on the statements and representations in the WPI application dated May 13, 2010, as supplemented June 3, 2010, the staff agrees that the use by WPI of the Model No. BMI-1 package meets the requirements of 10 CFR Part 71, subject to the conditions listed above.

Issued on June 10, 2010.