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August 4, 2009

ATTN: Document Control Desk
Director, Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Request for the Authorization for Use of an Expired Type B Transportation Package

Dear Director:

The University of Missouri Research Reactor (MURR) is requesting an extension of the U.S. Nuclear Regulatory Commission's (NRC) authorization to use the BMI-1 package, Certificate of Compliance No. 5957, on a limited basis beyond the three shipments currently authorized by your letter dated November 6, 2008. This request is necessary due to the slippage and uncertainties in the predicted schedule for the licensing and manufacture of the U.S. Department of Energy's (DOE) new replacement package. This uncertainty, combined with DOE's recent indication that the Savannah River Site would need time to prepare for the receipt of the new replacement package, would most likely mean MURR would be unable to ship spent fuel with the new package before late calendar 2010.

The supporting information for this request is an update to the letter MURR submitted on September 15, 2008 requesting the current authorization to use the BMI-1 package beyond October 1, 2008. This request also follows the guidance provided by NRC Regulatory Issue Summary (RIS) 2008-18, "Information on Requests for Extending Use of Expiring Transportation Packages," dated August 14, 2008.

(1) Package Information

BMI-1 Package ID Number USA/5957/B()F; Certificate of Compliance Number 5957; Docket Number 71-5957.

(2) Identification of Shipments

MURR requests the limited use of this package for the period of October 1, 2009 to October 1, 2010, in order to perform three (3) spent fuel shipments from our university-operated research reactor. There would be one package per shipment. The BMI-1 package has a dedicated trailer that is designed specifically for shipping this package as an exclusive use, highway route controlled quantity shipment.

The proposed shipments using this package would originate from MURR, in Columbia, Missouri, under NRC Quality Assurance Program Approval for Radioactive Material Packages, No. 0108, Revision 9 dated April 6, 2009. The destination for all shipments would be the DOE Savannah River Site as part of the DOE's Research Reactor Infrastructure Program (formerly the University Reactor Fuels Assistance Program).

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The mode of transportation for the BMI-1 package is by highway conveyance using a flatbed trailer specifically designed for this package. These shipments have strict security measures as required by NRC Orders regarding safeguards and security compensatory measures for the transportation of spent nuclear fuel.

The general timeframe would be three (3) shipments between October 1, 2009 and October 1, 2010. The date of the last shipment would be before October 1, 2010, or when the new package that is currently being designed and manufactured by the DOE contractor is approved, available for use and preparations for receipt at Savannah River Site are complete.

(3) Reasons for Requesting Extended Use

MURR requests the extended use of the BMI-1 package, in part, to assist the DOE to meet its mission with respect to the return of spent nuclear fuel from operating university research reactors. This is the package that the DOE has provided for research reactors for the return of spent research reactor fuel for over 15 years. It is imperative that spent fuel from these operating reactors, including MURR, be returned in a timely manner to DOE possession in order to minimize the spent fuel inventory at these university research reactors.

The DOE, the BMI-1 package owner, is making good faith efforts through their contractor at the Idaho National Laboratory (INL) to design, fabricate and license a package to replace the BMI-1 packaging. The activities to design and fabricate a replacement package are well underway and are described in more detail under item (5) below.

The transportation schedule for the return of spent research reactor fuel cannot be adjusted to allow these shipments to be made prior to October 1, 2009, because spent research reactor fuel is generated over the ongoing period of reactor operation that we require in order to meet our mission. There is also a requirement for a 150-day cooling period after last use before shipment of MURR spent fuel.

The limited extended use of the BMI-1 package is necessary to allow MURR to maintain minimum inventories of spent fuel on site. This is consistent with recent NRC directives for enhanced security at research reactor facilities. If the schedule for the availability of the new package to replace the BMI-1 is delayed, the operating status of our research reactor could be seriously impaired. MURR operates a significant portion of the year in support of our university's research, education and service mission.

If MURR was unable to ship spent fuel for an extended period of time, it would result in a severe impact on the domestic supply of radioisotopes for medical uses, industrial applications and research. MURR is the sole domestic source for several radioisotopes (Sm-153, Cs-131 and Yb-169) needed for cancer treatment. MURR's relatively high flux and reliable operating schedule allow it to be the weekly source for the high-activity radionuclides needed for medical, industrial and research use.

(4) Safety Justification for Continued Use and Proposed Compensatory Measures

The BMI-1 package has had an impressive safety record and for over 15 years has been the primary package used by the DOE for the return of spent fuel from university-operated research reactors to the DOE as part of the University Reactor Fuels Assistance Program (now the Research Reactor Infrastructure Program). During this extended period the package has been used safely and securely to make well over 50 shipments from university reactor facilities to the Savannah River Site.

The BMI-1 package appears to be a package design categorized in Federal Register/Vol. 69, No.16, January 26, 2004, page 3731, as one that may meet current safety designs but is impractical to recertify or one for which the safety performance of the package design under the new standards is not known. This package is the only one of its kind and has a limited, but very important use.

The NRC and Department of Transportation (DOT) recognized in their responses to questions in the Final Rules implementing regulation to harmonize with International Atomic Energy Agency (IAEA) standards (Federal Register/Vol. 69. No. 16, dated January 26, 2004) that there were no imminent safety hazards posed by the use of packages, like the BMI-1, that would preclude their safe use during the transition period unless a safety issue with the package was identified. In this case, no new safety issues with the use of the BMI-1 package have arisen.

The BMI-1 package has been well maintained under the NRC Quality Assurance Program Approval for Radioactive Packages, No. 0108, issued to MURR. This maintenance includes both annual and biennial inspections and testing to verify package integrity. These inspections include non-destructive testing of welds, which must be sound for safe operation, leak tightness tests in accordance with ANSI N14.5, "Radioactive Materials - Leakage Tests on Packages for Shipment," and the replacement of sealing gaskets at least every 12 months or if any evidence of deterioration is detected. The operational tests include temperature stabilization and leak tightness tests after loading for each use of the package.

The following compensatory measures will continue to be implemented for the limited number of shipments specified if the request to extend the use of the BMI-1 package is approved:

1. The shipments using this package are required to be exclusive use, highway route controlled quantity shipments. These shipments are coordinated with all relevant government entities in the package route so that if an emergency situation were to occur immediate response is available. This package is shipped using a trailer designed specifically for this package. Before each shipment a Level 6 Department of Transportation (DOT) inspection will be performed on the tractor and trailer.

2. Special package inspections will be incorporated before each use of the BMI-1 package. This will include:

    a. Replacement of sealing gaskets prior to each shipment, rather than the current 12 month interval, and
    b. Comprehensive inspection of all sealing gasket seating surfaces.

(5) A Plan and Schedule to Acquire Replacement Packages or Complete Necessary Shipments

The DOE is replacing the BMI-1 package with a new package currently being procured by INL and designed and manufactured by AREVA Federal Services (AFS). This package is being designed and licensed for the shipment of MTR-type spent fuel [specifically the University of Missouri Research Reactor (MURR) and the Massachusetts Institute of Technology Reactor (MITR)], for various types of TRIGA spent fuel, and for Advanced Test Reactor (ATR) spent fuel types.

A competitive bid proposal process has been followed to procure the new package. On February 22, 2008, the contract was awarded to AFS. An internal design review was held on April 10, 2008, and

the design team and INL project manager met with the NRC on May 7, 2008 to discuss the proposed design and schedule. An operations review meeting was conducted with MURR staff on July 15, 2008. Half-scale impact limiter testing was completed on February 17, 2009. The final design review meeting was held March 11, 2009 and the Safety Analysis Report (SAR) was submitted to the NRC on March 30, 2009. AFS awarded the cask fabrication contract in May 2009, with plans to have procurement and manufacturing activities run concurrent with NRC review.

It is our understanding that the NRC has provided AFS Requests for Additional Information (RAI) and AFS is currently developing, by working with potential cask users, the answers to the RAI's. The duration of the NRC review is dependant upon work load and reviewer availability. Some package fabrication will proceed at risk during the NRC review period, including the procurement of long lead items. There has been slippage in the schedule due, in part, to inclusion of threaded inserts in the package design. AFS anticipates receipt of the Certificate of Compliance (CoC) by September 30, 2009, with package delivery in November 2009.

The DOE recently indicated that auxiliary equipment for use of the new package at the Savannah River Site will be fabricated during FY-2010. During FY 2010, the Savannah River Site will complete preparations for receipt of the new package with an expectation they will be ready to receive first fuel shipments using the new package in late FY 2010.

Sincerely,

Ralph A. Butler
Director, University of Missouri Research Reactor

Xc: Associate Administrator for Hazardous Material Safety
Pipeline and Hazardous Materials Safety Administration
U. S. Department of Transportation