May 26, 2006

Mr. Richard W. Boyle, Chief
Radioactive Materials Branch
U.S. Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

SUBJECT: REVALIDATION OF THE JAPANESE CERTIFICATE OF APPROVAL NO. J/61/B(U)F-96 FOR THE MODEL NO. JRC-80Y-20T TRANSPORT PACKAGE

Dear Mr. Boyle:

This is in response to your letter dated January 19, 2006, requesting our assistance in evaluating the Model No. JRC-80Y-20T transport package, authorized by Japanese Certificate of Approval No. J/61/B(U)F-96.

Based upon our review, the statements and representations contained in the application, and in "Safety Analysis Report for JRC-80Y-20," and for the reasons stated in the enclosed Safety Evaluation Report, we recommend revalidation of Japanese Certificate of Approval No. J/61/B(U)F-96, dated September 29, 2005.

If you have any questions regarding this matter, please contact me or Meraj Rahimi of my staff at (301) 415-8500.

Sincerely,

/RA By C. Regan Acting For/

Robert A. Nelson, Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3035
TAC No. L23936

Enclosure: Safety Evaluation Report

Mr. Richard W. Boyle, Chief
Radioactive Materials Branch
U.S. Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

SUBJECT: REVALIDATION OF THE JAPANESE CERTIFICATE OF APPROVAL NO. J/61/B(U)F-96 FOR THE MODEL NO. JRC-80Y-20T TRANSPORT PACKAGE

Dear Mr. Boyle:

This is in response to your letter dated January 19, 2006, requesting our assistance in evaluating the Model No. JRC-80Y-20T transport package, authorized by Japanese Certificate of Approval No. J/61/B(U)F-96.

Based upon our review, the statements and representations contained in the application, and in "Safety Analysis Report for JRC-80Y-20," and for the reasons stated in the enclosed Safety Evaluation Report, we recommend revalidation of Japanese Certificate of Approval No. J/61/B(U)F-96, dated September 29, 2005.

If you have any questions regarding this matter, please contact me or Meraj Rahimi of my staff at (301) 415-8500.

Sincerely,

/RA By C. Regan Acting For/

Robert A. Nelson, Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3035
TAC No. L23936

Enclosure: Safety Evaluation Report

E:\Filenet\ML061460373.wpd ML061460373

OFC	SFPO		SFPO	E	SFPO		SFPO	E		
NAME	MRahimi		MDeBose		Gbjorkman GHornseth for		Rnelson CRegan for			
DATE	5/24/06		5/25/06		5/26/06		5/26/06			

C=Without attachment/enclosure E=With attachment/enclosure N=No copy

OFFICIAL RECORD COPY

SAFETY EVALUATION REPORT
JRC-80Y-20T Transport Package
Japanese Certificate No. J/61/B(U)F-96, Revision 1
Docket No. 71-3035

SUMMARY

By letter dated January 19, 2006, the U.S. Department of Transportation (DOT) requested that the U.S. Nuclear Regulatory Commission (NRC) evaluate and provide recommendations concerning DOT revalidation and issuance of a Competent Authority Certificate for import and export within the United States for the Model No. JRC-80Y-20T package. Japan Atomic Energy Research Institute (JAERI) requested, through Edlow International Company, that DOT issue a U.S. Competent Authority Certificate for the Model No. JRC-80Y-20T package design. Based upon our review, the statements and representations contained in the application, and in "Safety Analysis Report for JRC-80Y-20," and for the reason stated in the following, we recommend revalidation of Japanese Certificate of Approval No. J/61/B(U)F-96, dated September 29, 2005.

BACKGROUND

The Model No. JRC-80Y-20T was previously evaluated by the staff (NRC letter to DOT dated June 27, 2003). During the 2003 evaluation, the staff identified an issue concerning the applicability of experimental data for steel fins that differ in material and geometry from the type of fins used for the JRC-80Y-20T package. To demonstrate the acceptability of the fin design, the applicant committed to performing non-linear finite element impact analyses of the package. On January 20, 2004, the results of the finite structural element analysis indicated that g-loads in the original analysis were underestimated by a factor of 2 to 3. When the package was subjected to the 30-ft corner drop test significant deformation could result in the seal region of the package under hypothetical accident conditions. The recommendation for revalidation was not appropriate at the time of the analysis. NRC recommended that the applicant submit the finite element structural analysis to the Japanese Competent Authority for review and evaluation. The NRC would complete the review for revalidation at a later date. On January 19, 2006, JAERI submitted an application for revalidation.

GENERAL INFORMATION

The main structures of the cask consist of the shell, bottom plate, lid, and basket. The cask is a solid stainless steel forging weighing approximately 23 metric tons (20.87 tons) when loaded. It has an inner diameter of 820 mm (32.3 in) and a thickness of 310 mm (12.2 in), with heat dissipating and shock absorbing fins attached. The main body fins are 50 mm (2 in) thick, 200 mm (8 in) in height, and installed around the shell at a pitch of 10 degrees. The bottom fins are 30 mm (1.2 in) thick, 200 mm (8 in) in height, and installed around the bottom plate at a pitch of 5 degrees. The cask is closed by installing the lid which is sealed by double O-rings and secured by 16 bolts. The lid is 370 mm (14.6 in) thick with heat dissipating and shock absorbing fins similar to those of the shell body. A test port is provided within the lid for leak

testing. The lid also houses a vent port with a cover plate that is sealed with a double O-ring seal. The bottom shell has an installed drain port, which is also sealed by a port cover plate and double O-ring seal. The shell, lid, and bottom plate also serve as shielding.

Two lifting lugs installed on the cask body are provided for handling the package. During transport, the package is tied down to a support frame. Various basket configurations are available for the different spent nuclear fuels authorized to be shipped within this package.

2.0 STRUCTURAL

The staff performed a structural review of the Model No. JRC-80Y-20T package. The structural review focused on Chapter II-A of the Safety Analysis Report (SAR) with emphasis on the hypothetical accident condition.

For the 9m (30 ft.) drop, the staff observed that the highest stresses in the lid bolts occurred for the center of gravity (c.g.) over top corner drop. This was consistent with previous submittals. The analysis was performed using the LS-DYNA explicit dynamics finite element code. The staff requested and received copies of the LS-DYNA computer files for the c.g. over top corner drop. The staff's review of the finite element model concluded that the model had sufficient detail to accurately calculate stress and strain at critical locations. The staff reviewed the material properties of the various package components as given in Table A.3 "Mechanical Properties of Materials" and Appendix A.10.1 "Mechanical Properties of Materials used in Drop Impact Analysis" and compared them to the material properties used for the same components in the LS-DYNA model. The total mass of the model and impact velocity were checked. The staff examined the response of various components of the package during impact and found their response behavior to be consistent with what the staff would expect from a full scale test. The components examined in detail included the lid bolts and flange region of the cask body and cask lid and cask fins. The strain results for the cask body and lid and the stress time-histories of the lid bolts were identical to those presented in the SAR by the applicant.

The staff finds that the cask structural modifications in the amended Certificate of Approval and SAR and the analyses and evaluations performed by the applicant to be acceptable by the staff.

CONCLUSION

Based upon our review, the statements and representations contained in the application, and in "Safety Analysis Report for JRC-80Y-20," and for the reasons stated in the above, we recommend revalidation of Japanese Certificate of Approval No. J/61/B(U)F-96, dated September 29, 2005.

Issued with the letter to Mr. Richard W. Boyle
on May 26, 2006.