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December 3, 2008
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Attention: 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 20555-001

Subject: Authorization request Party Status for Special Permit DOT-SP 14663

BWX Technologies, Inc. requests authorization for Special Permit DOT-SP 14663. Idaho National Laboratory (DOE) requested the Special Permit for BWXT to make eight shipments to MURR and MIT during FY-2009. A copy of the "Container Life Extension Request" from the DOE is enclosed, describing the need for the temporary continued use of the 110 Gallon DOT 6M shipping containers.

BWXT has received party status from the U.S. Department of Transportation per 49CFR107.107.

Our contact information for DOT-SP 14663 is as follows:

BWX Technologies, Inc.
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Please contact me at 434-522-5665 if you have any questions or need additional information.

Sincerely,

Cheryl Duff for Barry Cole

Barry Cole, Manager
Manager, Licensing and Safety Analysis
(Licensing Officer)

Enclosure

cc: NRC, NMSS
NRC, Merritt Baker
NRC, Region II
NRC, Senior Resident Inspector

NMSS01

ENCLOSURE

Report No.: F333091108-001
Data as of: 09/10/2008
Report Date: 09/11/2008

Container Life Extension Request
Idaho National Laboratory

(1) Package Information: 110 gallon 6M containers

(2) Identification of Shipments:

(a) Number of shipments: Eight shipments are expected to be made from the BWXT fuel fabrication facility to MURR and MIT during FY-2009.

(b) Number of packages per shipment: There will be a total of five consignments consisting of four packages each made to MURR from the BWXT facility during the extended transition time period. There will be a total of three consignments consisting of three packages each made to MIT from the BWXT facility during the extended transition time period.

(c) Packaging serial numbers:
S/N 2932
S/N 2926
S/N 2935
S/N UFP-07
S/N 2940
S/N 2933
S/N 2941
S/N 2937
S/N UFP-25
S/N 2913
S/N 2925

(d) Package contents: The MURR fuel assembly consist of 24 curved fuel plates that are approximately 26 inches long. The fuel plates are rigidly held together with aluminum end fittings and aluminum side plates to form the assembly. Each fuel plate of the assembly consists of a 0.020 inch thick fuel meat section completely enclosed by 0.015 inch thick aluminum cladding. Fuel meat is a uranium aluminide and aluminum powder compact with 830 grams of total uranium in each fuel assembly. The uranium is 93% enriched in the isotope of U-235. Only one fuel element is contained per DOT Specification 6M package. A criticality safety index (CSI) of 0.0 is assigned to the package and to the consignment of four packages.

The MIT fuel assembly consists of 15 fuel plates that are approximately 23 inches long. The fuel plates are rigidly held together with aluminum end fittings and aluminum side plates to form the assembly. Each fuel plate of the assembly consists of a 0.030 inch thick fuel meat section completely enclosed by 0.015 inch thick aluminum cladding. Fuel meat is a uranium aluminide and aluminum powder compact with 510 grams of total uranium in each fuel assembly. The uranium is 93% enriched in the isotope of U-2335. Only one fuel assembly is contained per DOT specification 6M package. A criticality index (CSI) of 0.0 is assigned to the package and to the consignment of three packages.

The CSI is based on the fissile mass and hydrogen-to-fissile (H/X) atom ratio. For a CSI of 0.0, all the H in the 2R is to be accounted for per 49 CFR 173.417(b)(2)(i). If the fuel elements are cushioned with hydrogenous-type material, the H in the cushioning material is to be included in the H/X evaluation.

Both the MURR and MIT fuel elements are Type A quantities of radioactive material. BWXT makes this shipment in a Type B package (6M Drum) per 49 CFR 173.417 which allows this type of shipment. Currently a suitable Type AF packaging is not available for shipment of these materials. So the Type B 6M drum is being utilized.

(e) End use of the radioactive material: The fuel assemblies will be used in the MURR and MIT research reactor programs. MURR is a major provider of radiation services to the medical community as well as to industry. Radioactive isotopes supplied by the MURR are used in medicine for treatment and diagnosis of various types of cancers. They are also used as tracers in various research and industrial applications including oil and gas exploration and in plant and animal tracer studies. The MURR is the sole supplier of several radiopharmaceuticals on a weekly basis which are used for cancer treatment. MURR is also the sole supplier of radioisotopes for other medical use, industrial applications and research activities which depend on weekly supplies from MURR. MURR is the sole domestic source for Sm-153, Ir-192, Cs-131, P-32, P-33, and Yb-169. Sm-153 is a radioactive component for pain palliation in metastatic cancer patients. Ir-192 is used by a variety of companies for both brachytherapy applications and industrial applications. Cs-131 is used as a radioactive component for a variety of cancer treatments. Y-169 is supplied for cancer research. MURR also produces a number of other radioisotopes that are vital for research or commerce. MIT's main product is research and education. MIT also produces radioisotopes and doped silicon.

(f) Shipment origin and destination: The package is used to ship fuel assemblies from the BWXT fuel fabrication facility in Lynchburg, Virginia to either MURR in Columbia, Missouri, or MIT in Cambridge, Massachusetts. In the unlikely event an element needs to be returned from the university to BWXT the element would be held at the university until the ATR Fresh Fuel Shipping Containers are available.
(g) Mode: The mode of transportation will be highway.
(h) General time-frame: October 1, 2008 – October 31, 2009
(i) Date last shipment will be completed: The last shipment during the extended period will be completed in October 2009.

(3) Reasons for Requesting Extended Use:

(a) No licensed Type B Fissile package has been identified that has the internal cavity dimensions required to ship MURR fuel elements. For example, the ES-3100 cavity has an internal length of 31.5 inches. The MURR fuel element is 32.5 inches in length. The MIT fuel element is approximately 26.25 inches in length, therefore the ES-3100 could be used for the MIT fuel element shipment, but it is not authorized for MIT fuel elements. An amendment to the ES-3100 license would be required. The proposed ES-4100 package will be of sufficient length for shipment of MURR and MIT fuel elements, but this container is still in the design phase and will not be available for use before October 1, 2008. A replacement package, the ATR Fresh Fuel Shipping Container (Docket 71-9330), was recently approved by the NRC; however, these packages will not be available until Package 71-9930, Rev. 1 amendment

approval authorizing MIT and MURR fuel elements and holder fabrication is complete. Based on NRC anticipated workload, it is estimated that the Package 71-9930, Rev. 1 amendment approval will not be received until spring 2009. Holder fabrication is expected 4-6 weeks following amendment approval.

(b) The 6M package is the only package that B&W currently uses that is physically large enough to ship MURR and MIT elements. Neither the MURR nor MIT fuel elements can be subdivided into smaller quantities. To do so would require final fabrication into an element at MURR or MIT. Neither has the capability. Thus, subdivision of an element to meet non-fissile quantity requirements to make multiple shipments is not feasible.

(c) Based on these estimates, this package will not be available for use until October 2009. Since this package will not be available prior to the October 1, 2008, a serious negative impact on the ability of DOE to support the operation of university research reactors will be incurred. If the supply of fresh fuel to MURR is impacted severely, to the extent that it alters the operating schedule, medical treatments would not be possible and shipments of research and industrial use isotopes described would not be produced.

(4) Safety Justification for Continued Use and Proposed Compensatory Measures: The DOT Specification 6M has a proven safety record in use. Since the 6M package lacks some of the safety enhancements included in newer designs, the following compensatory measures will be used to provide an equivalent level of safety:

(a) A pre-use inspection (CSIR for Spec. 6M, January 11, Rev. 3) (page four of this report) will be performed on each packaging to ensure it is in unimpaired physical condition and that it still meets the requirements of Specifications 6M and 2R in 49 CFR (2003 edition);

(b) All 6M's will be prepared, loaded, and assembled for shipment in accordance with the requirements of Specifications 6M and 2R in 49 CFR (2003 edition); and

(c) Transport will be by exclusive use.

BWXT's QA plan number is QAP-0088, Quality Assurance Plan for Shipping Program. The NRC Docket No. is 71-0088.

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

A replacement package, the ATR Fresh Fuel Shipping Container (Docket 71-9330), a Type AF package, was recently approved by the NRC; however, these packages will not be available until Package 71-9930, Rev. 1 amendment approval authorizing MIT and MURR fuel elements and holder fabrication is complete. Based on NRC anticipated workload, it is estimated that the Package 71-9930, Rev. 1 amendment approval will not be received until spring 2009. Holder fabrication is expected 4-6 weeks following amendment approval. Based on these estimates, this package will not be available for use until October 2009. In November 2009, the ATR Fresh Fuel Shipping Container will be used to ship MURR and MIT fuel elements.

CSIR For Spec. 6M, JANUARY 11 Rev. 3

BWXT, Container Specification and Inspection Report
Spec. 6M Package, **Shading*Denotes Change**

Part 1, Package and Loading Specifications				Part 2, Inspection Check List	
Item #	Inspection Items		Accept (✓) or Record (R)	Shipment ID: R or ✓	Init. & Date
1	Copy of consignee's SNM license		(✓)		
2	Package Fitness QC Inspect	Inner vessel & closure cap for damage. Check threads. Outer drum, surface rust only, no major dents, no tears. ID plates (or equivalent) present and unobstructed. Lid, surface rust only, no major dents or tears. "Clam Shell Device" or "locking ring" not crinked, threads not galled. Celotex & plywood disks not crushed, deformed, or broken Plywood disks, not deformed or broken, adjacent to 2R Container. Four vent holes plugged. **Record data on E4-1029**	See Form E4-1029		
3	Contents:	Radioactive Material as Uranium in solid form, stable to 250 deg. F. Gm. U-235, meets Table 2 of this CSIR Calculate H/X per OP-1000312 and record on E4-1029 Second person verify H/X calculations on E4-1029	(✓)		
*4	Packaging	Uranium material in sealed poly bottles or in sealed metal cans Bottles or cans placed in inner container Plumbers tape or other sealant placed on threads inner container Top is tightened with ≥ 5 threads engaged *If specified by Transportation Adm or designee, place inner container into plastic sleeve, sealed at bottom and taped at top* Insert inner container into place. If needed, use filler material to snug the fit. Plywood spacer disk adjacent to inner container Celotex spacers in place Lid secured with "Clam Shell Device" or "locking ring". Torque to 40 ± 5 ft.lbs. (If using "clam shell device", ends of "clam shell" should not touch.) Tamper seal per OP-1000312 and record on E4-1029.	(✓)		
5	Drum Capacity, gallons and Drum Weight, lbs, meets Table 3 of CSIR Maximum Gross Weight clearly & legibly marked on drum		(✓)		
6	Have Radiation Protection survey per RP-09-03 for NR Material and RP-09-04 for non NR Material		(✓)		
*7	Marking & Labeling	Type B(U) Proper Shipping Name & UN Number and Address of Consignor and/or Consignee marked on package Radioactive labels applied at both sides of drum. See Table 5. Required info indicated on labels. 2 Fissile labels applied. CSI recorded on label. CSI assigned per Table 2 Apply Trefoil Label Gross weight if > 110 lbs **Record Gross Weight on E4-1029** Radioactive packages marked "Type B" (in at least .5 inch in height) Packages exceeding the U-235 limits shown in Appendix III of RMS-1 or RMS-2 shall be marked "RQ"	(✓)		
8	NMC complete "Bill of Lading Printing System" and/or RM Packing List		(✓)		
9	Second person verify all loading data is correct and within packaging limits. NOTE: If out of packaging limits, stop and notify area supervisor and NCS Manager immediately		(✓)		
10	Placard vehicle if required.		(✓)		
11	Transportation Administrator or designee review all steps. All package items complete, package released to carrier.		(✓)		

RMS-02
Attachment 14

Page 1 of 1

CSIR For Spec. 6M, JANUARY 11 Rev. 3

BWXT, Container Specification and Inspection Report **Spec. 6M Package,**

Table 2 – Packaging Limits:
≤ 93.5% U-235

H/X	Metal or Alloy <0	Compounds <0	<3	CSI
	1600	1600	1600	0
	1600.1g to 7200g	1600.1g to 7600g	1600.1g to 5300g	0.1
	7200.1g to 8700g	7600.1g to 9600g	5300.1g to 6400g	0.2
	8700.1g to 11200g	9600.1g to 13900g	6400.1g to 8200g	0.5
	11200.1g to 13600g	13900.1g to 16800g	8200.1g to 10100g	1.0
	16800.1g to 28000g	10100.1g to 16100g	5.0	
	28000.1g to 32000g	16100.1g to 19500g	10.0	

NOTE: - for H/X calculation, for material up to 1600grams, include all hydrogenous material in the ZR inner container.
- For H/X calculation, for material greater than 1600grams, consider only hydrogenous material interspersed with the U235.
- Except for material with a CSI of 0.0 (7600g and below) the maximum permitted U235 enrichment is 93.5%

Table 1 – Deleted

Table 3. Gross Wt. Limits Lb.

Marked Capacity	Gross Wt.
15.0	160
30	480
55	640
110	640

Table 4, GBq per gm U-235

% U-235	GBq/gm
Depleted	0.0085
Nat'l – 5.0	0.0036
6.0 – 49.0	0.0021
50.0 – 93.0	0.00255
> 93.0	0.0037

Table 5, Labeling criteria

Label	Surface mSv/hr	TI
White I	≤ 0.005	***0
Yellow II	> 0.005 ≤ .5	≤ 1.0
Yellow III	> .05 ≤ 2	> 1.0 < 10
** Yellow III	> 2 ≤ 10	> 10

** Exclusive Use Only
*** If the measured TI is not greater than 0.05, the value may be considered to be zero.

Table 6, Deleted

*See procedure OP-1000312 for H/X calculations.

Table 7, "RQ" Criteria - Deleted

See Appendix III of RMS-1 or RMS-2