

# UNIVERSITY *of* MISSOURI

## RESEARCH REACTOR CENTER

April 14, 2014

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, D.C. 20555-0001

REFERENCE: Docket 50-186  
University of Missouri-Columbia Research Reactor  
Amended Facility License R-103

SUBJECT: Written report, in accordance with 10 CFR 71.1, as required by 10 CFR 71.95(b) [for NRC Docket 91-9341] regarding conditions in the Certificate of Compliance for the BEA Research Reactor Package that were not met during shipment

Dear Sir or Madam,

The University of Missouri Research Reactor (MURR) submits this letter to report a condition pursuant to 10 CFR 71.95(b) regarding the use of the BEA Research Reactor (BRR) Package, NRC Docket 71-9341.

The following is a description of the event, reported in accordance with 10 CFR 71.95(c):

*(1) Brief abstract of the event*

During 7 shipments of irradiated research reactor fuel between Columbia, MO and the Savannah River Site (SRS) between October 2011 and May 2013, the conditions contained in Section 5.(a)(3) of the Certificate of Compliance (CoC) were not met in their entirety. Specifically, a part supplied by the certificate holder, the alignment pin between the cask body and the closure lid, was not made of the material specified on the General Arrangement Drawings referenced in the CoC. To correct this situation, the certificate holder is ensuring a new alignment pin is being fabricated to the specifications of the CoC. Until the new pin is installed, the cask has been removed from service.

*(2) Narrative description of the event*

On March 10, 2014, MURR was notified by a representative of Idaho National Laboratory (INL) that the part known as the alignment pin had originally been fabricated using a material not approved in the certificate (NRC Certificate of Compliance 71-9341). This fabrication error was attributed to a typographical error on the package as-built drawings.



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The purpose of the pin is to align the bolt holes in the closure lid with the threaded holes in the cask body during installation of the lid. Per the certificate holder's documentation, the pin has no safety function and has therefore been categorized as Quality Category C. The material of the pin is specified in the List of Materials of drawing 1910-01-01-SAR, Revision 4, as ASTM A276, UNS 21800. The actual material used for the pin was Type 304 stainless steel. All other requirements of the CoC were met by the subject shipments.

The original alignment pin had been installed on the package by the manufacturer and was in place upon MURR's original receipt of the package. The package was used by MURR in this configuration during 2 shipments between October 2011 and April 2012. Subsequently, the pin failed at another user's site and was replaced using a part fabricated at MURR, per the certificate holder's instructions, from 304 stainless steel. Installation of the pin was performed at the other user's site, and the package has been used by MURR in this configuration during 5 shipments between April 2012 and May 2013.

For all shipments of the packaging from MURR, the payload consisted of up to eight irradiated aluminum plate-type research reactor fuel elements. A detailed description of the irradiated fuel is given in Section 1.2.2.1 of the BRR Package Safety Analysis Report.

*(3) Assessment of safety consequences of the event*

Since the alignment pin does not perform a safety function, there were no safety consequences of the event. The alignment pin continued to perform its alignment function, even though made of the wrong material.

*(4) Description of corrective actions*

As noted above, the packaging has been taken out of service until the alignment pin can be replaced in accordance with the certificate holder's Quality Assurance Program and procedures.

Since the alignment pin is threaded in place, replacement may be readily performed. The certificate holder, AREVA Federal Services LLC, has opened a Corrective Action Report (CAR) in accordance with their 10 CFR 71 Subpart H Quality Assurance Program and procedures, and has performed a complete reconciliation between the licensing drawings and the fabrication drawings to ensure that all other components have been fabricated in full compliance with the licensing drawings. A more complete description of corrective actions taken by the certificate holder may be obtained from AREVA.

MURR has initiated a Corrective Action Program (CAP) item, CAP 14-0023, to document the issue and will review the certificate holder's corrective actions and NRC resolution of the issues prior to using the cask.

*(5) Reference to similar events*

By letter dated March 23, 2012, MURR notified the NRC of performing two shipments using the BRR Package in the fall of 2011 with an incorrect drain port sealing washer installed. This sealing washer was incorrectly specified in the package documentation; therefore, the incorrect part had been supplied by the manufacturer with the cask. A similar issue was experienced at the Massachusetts Institute of Technology

(MIT) Nuclear Reactor Laboratory in November 2011, as indicated in their letters to the NRC dated January 25 and February 3, 2012.

*(6) Licensee contact*

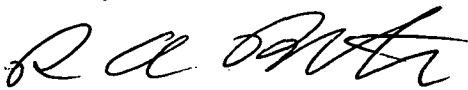
For further discussion of this incident, please contact John Ernst, Associate Director for Health and Safety, at 573-882-5226 or ernstj@missouri.edu.

*(7) Extent of exposure of individuals*

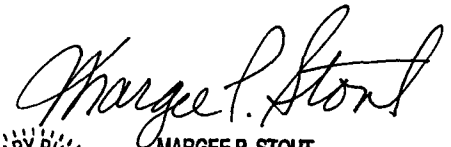
There was no exposure to individuals as a result of this event.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,



Ralph A. Butler, P.E.  
Director



MARGEE P. STOUT  
My Commission Expires  
March 24, 2016  
Montgomery County  
Commission #12511436

xc: Mr. Alexander Adams, U.S. NRC  
Mr. Johnny Eads, U.S. NRC  
Reactor Advisory Committee  
Reactor Safety Subcommittee  
Battelle Energy Alliance