



Ref: AFS-18-0010

January 30, 2018

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

**SUBJECT:** BRR Package Amendment Request, Docket No. 71-9341, SAR Revision 11

AREVA Federal Services LLC (AFS) hereby submits Revision 11 of the Safety Analysis Report for the BRR Package, Docket No. 71-9341. This revision adds the transport of Co-60 isotope production targets to the authorized payloads.

The Co-60 is generated at reactors such as the ATR in Idaho, and shipped to users in the BRR package. A new basket has been designed to accommodate the targets, and target holders have been designed to house each target to confine any material that could escape from a target. In addition, a personnel barrier has been designed for use with the isotope payloads, to maintain the accessible surface temperature within regulatory limits. No changes have been made to the cask or impact limiters.

Structural, thermal, and shielding analyses (reflected in revisions to SAR chapters 2, 3, and 5, respectively) have been updated. All regulatory requirements have been met and all margins of safety remain positive. Necessary changes to SAR chapters 1 and 7 have been made to accommodate the isotope payloads. Chapters 4, 6, and 8 remain unchanged from Revision 10. All changes are indicated by a revision bar in the right page margin. Due to the quantity of changed pages, and due to the fact that paper copies are now double-sided, the SAR is updated in its entirety, and all pages are identified as Revision 11. A brief SAR change summary table is provided below.

AFS would also like to request a correction of a typographical error we discovered in the Certificate of Compliance (CoC), Revision 5, issued by the NRC on July 21, 2016. In Table 1.4 of the CoC, for TRIGA Fuel ID 201, the fuel OD should be corrected from 1.44 inches to 1.41 inches, consistent with the dimension given in Table 1.2-1 of the BRR package SAR. Of note, this discrepancy has no safety consequences.

As was discussed during our initial phone call in late October, an expedited NRC review of this SAR revision is requested by the Department of Energy Office of Science Isotope Programs customer, with the goal to have the CoC issued by early October, approximately 8 months from now. This expedited review is needed to support the current schedule for shipping the initial Co-60 irradiated targets in November 2018 in order to fulfill contracted deliveries of medical devices and isotopes, and to utilize a small window of availability for using the single BRR cask. The DOE Isotope Programs customer and AFS will provide prompt responses to any questions or requests for additional information to support the expedited review.

Included with this letter is one paper copy of the SAR and one CD-R containing the PDF file "BRR SAR, Complete, Rev. 11.pdf" (48,049 kb, 777 pages). The CD is contained within an envelope labeled, "BRR Package, Docket 71-9341 SAR Revision 11, Electronic Copy of Document".

NM5520

**AREVA Federal Services LLC**

505 S. 336<sup>th</sup> Street, Suite 400, Federal Way, WA 98003 - USA - Tel: 1 253.552.1310 - Fax: 1 253.552.1398



Should you have any questions regarding this submittal, including the expedited review request, please contact me at (253) 552-1321 or via E-mail ([phil.noss@areva.com](mailto:phil.noss@areva.com)).

Very Truly Yours,

**AREVA Federal Services LLC**

Phil Noss  
Licensing Manager

- cc: Mr. Bernard White, NRC (including one paper copy and five CDs)  
 Mr. Donald Darrington, INL P&T Program Manager (including one paper copy and one CD)  
 Mr. Ken Wahlquist, INL Technical Lead (including one paper copy and one CD)  
 Dr. Ethan Balkin, DOE-SC Isotope Programs (including one paper copy and one CD)

Chapter or Section	Change Summary
Chapter 1	Add new payload, describe new components. No change to spent fuel contents.
Drawings	Revised note 28, add depiction of personnel barrier. Add new drawing to depict isotope basket and target holder.
Chapter 2	Add discussion of design criteria for isotope basket, target holder, and personnel barrier. Add to weight and c.g. tables. Revise heat section for higher isotope basket temperature. Added differential thermal expansion calculations. Revise calculations for thermal stress. Revise reduced external pressure evaluation. Add necessary properties to Table 2.6-1. Correct a typo at the top of page 2.7-6. Add stress evaluation of isotope basket. Update summary of damage for revised margins of safety for isotope basket. Added Table 2.7-10.
Section 2.12.1	Added references.
Table 2.12.3-2	Corrected typo. Tests D1, D2, D2R, D2C, and P1 showed an incorrect reference to the test temperature. The temperature did not change, only the reference.
Section 2.12.4	Revised FEA stress analysis for revised NCT temperature.
Section 2.12.8	Added stress evaluations for the isotope basket.
Chapter 3	Editorial changes to clarify the results in the main sections apply to irradiated fuel.
Section 3.5.1	Added references.
Section 3.6	Added thermal evaluation for isotope payloads.
Chapter 5	Editorial changes to clarify the results in the main sections apply to irradiated fuel.
Section 5.6	Added shielding evaluation for isotope payloads.
Chapter 7	Revised operations to include isotope payloads.