



Nuclear Non-Proliferation
GTR, Global Threat Reduction Program
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505-667-0534/505-665-1235

Date: February 9, 2009
Refer To: NN-GTR:09-004

Robert A. Nelson, Chief
Licensing Branch
Division Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Mr. Nelson:

Los Alamos National Laboratory's Off-site Source Recovery Project (OSRP), through the U.S. Department of Energy's Office of Environmental Management (EM-63), hereby submits this request for modification to USA/9329/AF-96. Mr. Jim Shuler at EM-63 has advised that, due to the time-sensitive nature of this request and his absence from his office on travel, we may submit the application directly to you.

A minor technical change must be made to the S300 certification to reflect the current revisions of the special form certificates for the Model II and Model III capsules, which are the approved content for the S300 under this certification.

Specifically, QSA Global revised its IAEA Certificate of Competent Authority (CoCA) Special Form Radioactive Materials, for the Model II (USA/0696/S-96) and Model III (USA/0695/S-96) special form capsules from Revision 2 to Revision 4 to explicitly describe impurities in the Pu-239 material referenced in the certificates, excluding daughter products. Because "Revision 2" of both of these certificates is specifically referenced in the "Contents" section of the NRC Certificate of Compliance for the S300, the certification for the S300 must be amended to reflect the most recent versions of these IAEA CoCAs. Included in this letter as Attachment A is some additional information on the specific changes requested. Addition of the radionuclide impurities present in the capsules as part of the Pu-239 material does not present any challenge to compliance of the packaged containers with current limits.

I am also attaching copies of both Revisions 2 and 4 of the IAEA CoCAs for the Model II and Model III capsules for your convenience. Suggested SAR change pages are available on request.

If you require any further information on this submittal, please contact me at (505) 667-0534 [office] or (505) 699-3915 [cell], or call Mr. Justin Griffin at (505) 231-9523.

Regards,



Julia Whitworth
OSRP Program Manager

Attachments: a/s

Cc:

Abigail Cuthbertson, NNSA, NA-21
Justin Griffin, N-3, MSJ552, w/o attachment
Rick Rasmussen, N-3, MSJ552, w/o attachment
Scott Ravenhill, NNSA, NA-21, w/attachment
Jim Shuler, USDOE, w/attachment
GTR Files
IRM-RMMSO, A150, w/o attachment

Attachment A

The content description for the Model II and III special form capsules that are packaged in S300 containers has been clarified to include the known isotopic impurities present in Pu-239 used in sealed radioactive neutron sources. The range of distribution of isotopes used to manufacture these sources is given in the table below, as a percentage of total plutonium. The special form capsule revision requests (Attachment B) are based on the maximum quantities that could be present for each of the impurity isotopes.

Radionuclide	Mass Fraction
Pu-238	0-0.5%
Pu-239	73-97%
Pu-240	3-21%
Pu-241	0-3%
Pu-242	0-2%
Am-241	0-2.5%

Total contents will be limited to less than an A_1 quantity using the sum of the fractions rule. Dose rate measurements will be made on all packages to ensure compliance with DOT regulations, as stated in Section 7.1.3 of the S300 Safety Analysis Report.

The criticality limits derived in the S300 safety analysis were reevaluated because the plutonium was modeled as pure Pu-239. However, the plutonium used in the PuBe sources was generated in a reactor and therefore comprises the following isotopes: Pu-238, Pu-239, Pu-240, Pu-241, and Pu-242. The Pu-240/Pu can range from approximately 3 to 21%, and the Pu-241/Pu can range from approximately 0 to 3%. Pu-240 is significantly less reactive than Pu-239, although Pu-241 is more reactive than Pu-239. Because Pu-240 is always present in significantly larger quantities than Pu-241, it is conservative to simply model all plutonium as Pu-239.

The fissile material quantity (Pu-239 plus Pu-241) will not exceed what is currently specified as Pu-239 mass alone.