



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 20, 2018

Mr. Richard W. Boyle, Chief
Sciences Branch
Division of Engineering and Research
Office of Hazardous Materials Safety
U.S. Department of Transportation
1200 New Jersey Ave., S.E.
Washington, D.C. 20590

SUBJECT: APPLICATION FOR THE MODEL NO. MANON TRANSPORT PACKAGE –
SUPPLEMENTAL INFORMATION NEEDED

Dear Mr. Boyle:

By letter dated November 5, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18192B1310), the U.S. Department of Transportation requested that the U.S. Nuclear Regulatory Commission (NRC) staff perform a review of the French Certificate of Approval F/41 O/B(U)-96 Revision Ad, for the Model No. MANON transport package and make a recommendation concerning the revalidation of the package for import and export use. Specifically, you requested that the NRC only review the content in Appendix 3 to the French certificate. The NRC staff performed an acceptance review of your application to determine whether the application contains sufficient technical information in scope and depth to allow the NRC staff to complete a detailed technical review per the International Atomic Energy Agency Specific Safety Requirements No. 6, “Regulations for the Safe Transport of Radioactive Material,” 2012 Edition.

This letter is to advise you that based on our acceptance review, the application does not contain sufficient technical information. The information needed to begin our review is described in the enclosed request for supplemental information. In order to start our technical review, this information should be provided within 2 weeks from the date of this letter. Upon receiving your responses to this request for supplemental information, the NRC staff will evaluate the information to determine whether the supplementary information is responsive to the NRC staff's concerns.

The staff is available for a public meeting if you wish to discuss these issues in more detail prior to deciding on your course of action. Please reference Docket No. 71-3094 and EPID L-2018-NEW-0010 in future correspondence related to this action.

R. Boyle

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If you have any questions regarding these matters, please contact me at (301) 415-6577.

Sincerely,

/RA/

Bernard White, Senior Project Manager
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3094
EPID L-2018-NEW-0010

Enclosure:
Request for Supplemental Information

R. Boyle

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SUPPLEMENTAL INFORMATION NEEDED, DATE: December 20, 2018

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ADAMS P8 Accession No.: ML18355A571

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Request for Supplemental Information
U.S. Department of Transportation
French Approval Certificate Number F/41 O/B(U)-96 Revision Ad
Docket No. 71-3094
Model No. MANON Package

By letter dated November 5, 2018, the U.S. Department of Transportation (DOT) requested that the U.S. Nuclear Regulatory Commission (NRC) staff performs a review of the French Certificate of Approval F/41 O/B(U)-96 Revision Ad, for the Model No. MANON transport package and make a recommendation concerning the revalidation of the package for import and export use. Specifically, DOT requested that the NRC only review the content in Appendix 3 to the French certificate.

This request for supplemental information (RSI) identifies information needed by the NRC staff in connection with its acceptance review of the Model No. MANON package application to confirm whether the applicant has submitted a complete application in compliance with regulatory requirements.

SHIELDING EVALUATION

RSI-1 Provide the analysis demonstrating that the package shielding is sufficient to account for the bremsstrahlung source.

The applicant requested revalidation of the MANON package with contents for the Marguerite 20 generator containing 38 kCi of Sr-90. Sr-90 is a beta emitter, which decays to Y-90, which is also a beta emitter, before decaying to a stable nuclide. The beta radiation would be stopped within the MANON packaging. However, high energy betas, especially those emitted from Y-90 which has a maximum beta energy of 2.27 MeV, when interacting with high Z material, such as the lead in the Marguerite 20 generator, will generate bremsstrahlung photons. The applicant states in document U-8021-NT-01 Revision 1, page 9 that "The source term is evaluated with ORTGEN [sic] 2.2 <1> and incorporates bremsstrahlung."

The staff does not have enough information on how the bremsstrahlung source was generated or how the package materials were credited to provide sufficient shielding for this source. The information in Section 5.3 in document U-8021-NT-01 Revision 1, page 11 credits enough material to attenuate the beta source, but this is not sufficient to appropriately shield the bremsstrahlung source.

The staff requests that the applicant provide the following:

1. The bremsstrahlung source (i.e. energy spectrum and photons/sec).
2. Additional information on how the applicant generated the bremsstrahlung source. It is not clear from the statement above if it uses ORIGEN to do this or if it is evaluated using some other method. If it does use ORIGEN, the staff requests that the applicant provide the input file.
3. Materials and thicknesses of the packaging components credited within the shielding evaluation.
4. Drawings and tolerances for the credited components, with sufficient detail to justify the amount credited.

The staff needs this information to verify whether the MANON package meets the International Atomic Agency's Specific Safety Requirements No. SSR-6, "Regulations for the Safe Transport of Radioactive Material 2012 Edition", requirements relating to allowable maximum radiation levels in paragraphs 526, 527, 648(b), 659(b)(i).