



Global Nuclear Fuel

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~~Proprietary Information Notice~~

~~Attachment 2 to this letter contains GNF-A Company proprietary information which is to be withheld from public disclosure in accordance with 10 CFR 2.390 and RIS 2005-31. Upon removal of Attachment 2, the balance of this letter may be made public.~~

M180196

October 19, 2018

Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Document Control Desk

Subject: GNF-A Request for Letter Authorization to Use the RAJ-II Package for GNF FeCrAl Lead Test Assemblies

- References:
- 1) Docket 71-9309, NRC Certificate of Compliance (CoC) for Radioactive Material Package USA/9309/B(U)F-96 Revision 11 issued August 8, 2017.
 - 2) RAJ-II SAR NEDE-33869P Revision 9, Global Nuclear Fuel - Americas, LLC, September 2016.
 - 3) Letter from S. P. Murray (GNF-A) to Director, Division of Spent Fuel Management (US NRC), "GNF-A Request for Letter Authorization to Use the RAJ-II Package for GNF FeCrAl Lead Test Assemblies", July 28, 2017,
 - 4) Letter from P. Saverot (US NRC) to S. P. Murray (GNF-A), "Request for Additional Information for the Review of Model No. RAJ-II Package", September 26, 2017.

Dear Sir or Madam:

In view of the RAI letter dated September 26, 2017 (Reference 4), we have determined that the best licensing path is to revise the approach for analysis of the FeCrAl bundles for transportation. Thus, we are withdrawing our letter authorization request dated July 28, 2017 (Reference 3) and are submitting this request in lieu of RAI responses to Reference 4.

Global Nuclear Fuel - Americas LLC (GNF-A) hereby submits a revised request for a letter authorization (LA) to use the RAJ-II package for shipment of accident tolerant fuel (ATF) GNF FeCrAl fuel rods installed in a standard GNF2 BWR 10x10 fuel assembly. GNF-A has partnered with a BWR utility to initially deliver approximately four lead test assemblies (LTAs) containing lead test rods (LTRs) with GNF FeCrAl cladding and end plugs. This LA is being requested because the timeframe for the delivery of these LTAs is not supported by the time required to revise the Certificate of Compliance (CoC) to add the GNF FeCrAl fuel rods as authorized content in the RAJ-II package.

GNF-A requests an expedited NRC review and approval of the attached submittal by February 28, 2019 such that in-reactor experience can be gained for future qualification of the GNF FeCrAl cladding material. The first delivery under the requested LA is planned for mid-2019 and subsequent LTAs may be shipped through 2021. As such, it is requested that the LA remain valid through the end of 2021. Each shipment shall contain a maximum of 4 LTAs.

SUMMARY

GNF-A is requesting a LA to use CoC No. 9309, Revision 11 (Reference 1) for the Model RAJ-II transportation package for the shipment of ATF GNF FeCrAl LTRs installed in a standard GNF2 10x10 fuel assembly. GNF-A has partnered with a utility to deliver approximately four GNF2 fuel assemblies containing LTR's using GNF FeCrAl cladding. Based on the current business need, this LA only focuses on the GNF2 fuel design. The GNF2 design is GNF's production BWR fuel assembly and part of the currently approved GNF 10x10 contents included in the CoC, but not specifically named. The GNF2 fuel design consists of a 10x10 arrangement of fuel rods with water rods and part length rods that use a zirconium alloy cladding material.

The Model RAJ-II package is currently authorized to transport unirradiated fuel rods and fuel assemblies and shall not be modified for this request. The GNF FeCrAl LTAs, while similar to the currently approved GNF BWR 10x10 fuel assembly content, have rods which do not meet certain fuel parameters in RAJ-II CoC Revision 11 (Reference 1) and have reduced radionuclide maximum concentrations consistent with Type A(F) radioactive material within those fuel rods. All other requirements of Revision 11 (Reference 1) of the CoC remain applicable. Attachment 2 to this letter provides supplemental evaluations that demonstrate that the GNF2 assembly containing LTRs with GNF FeCrAl cladding and end plugs does not affect the ability of the package to meet the requirements of 10 CFR 71 and can be approved. Attachment 3 is a non-proprietary version of Attachment 2.

Each GNF FeCrAl alloy variant to be installed in a LTA configuration and loaded in the RAJ-II package shall have supporting evaluations based on data to show compliance with the requirements in Attachment 2.

EVALUATION

The GNF2 BWR 10x10 fuel assembly design containing LTRs with GNF FeCrAl fuel rods and end plugs is described in Attachment 2 to this letter. The parameters of the GNF2 design with LTRs using GNF FeCrAl fuel rods that are not within RAJ-II CoC Revision 11 (Reference 1) Table 3 Fuel Assembly Parameters are highlighted in Table 1-1 of Attachment 2 to this letter.

Attachment 2 of this letter provides the LA request and technical basis for NRC staff review based on Revision 9 of the Model RAJ-II Radioactive Material Transport Package Safety Analysis Report (Reference 1). The Attachment 2 information has been formatted consistent with NRC Regulatory Guide 7.9 "Standard Format and Content of Part 71 Packages for Radioactive Material" to aid NRC staff review and approval. Sections that are not affected by the addition of GNF FeCrAl LTRs are so noted in Attachment 2.

The GNF FeCrAl fuel rods are conservatively restricted to contain only Type A(F) material. As discussed in Attachment 2, it is conservatively assumed that all Type A(F) GNF FeCrAl rods completely fail upon impact during the 9-meter Hypothetical Accident Conditions (HAC) drop. Supplemental criticality evaluations are provided in Attachment 2 to address the consequences of failure of these rods during HAC and demonstrate criticality safety.

Except for certain fuel parameters and radionuclide maximum concentrations shown in Revision 11 of the RAJ-II CoC, all other requirements of CoC No. 9309 (Reference 1) remain applicable.

CONDITIONS

For the shipments of GNF2 10x10 LTAs containing GNF FeCrAl LTRs, the following conditions will apply and have been incorporated into the GNF-A specific evaluations:

1. The criticality safety index (CSI) is conservatively increased for combined shipments of GNF2 and GNF FeCrAl LTAs.
2. The GNF FeCrAl LTRs shall be restricted to containing commercial grade uranium and meet Type A radioactive material contents, while adjacent zirconium alloy fuel rods shall contain radioactive material consistent with the radionuclide maximum concentrations of Reference 1.
3. The fuel assemblies shall be shipped unchanneled.
4. There shall be a maximum of two RAJ-II packages on a single truck, each containing a maximum of two LTAs (CSI = 25).
5. RAJ-II packages with GNF FeCrAl LTAs shall comingle only with other RAJ-II packages transporting GNF2 fuel currently approved per Reference 1.
6. Those design parameters of the GNF FeCrAl LTAs that are outside of the NRC approved Revision 11 RAJ-II CoC (Reference 1) shall be limited to those design parameters listed in Table 1-1 of Attachment 2.

CONCLUSION

Based on the statements and representations contained in this letter authorization request and the conditions listed above, GNF-A concludes that the GNF2 fuel assembly design containing GNF FeCrAl LTRs has been adequately described and evaluated, meets the requirements of 10 CFR Part 71, and can be safely transported in the Model RAJ-II package.

Please contact Kent Halac at 910-819-5307 if there are questions regarding this request.

Sincerely,



Scott P. Murray, Manager
Facility Licensing

Document Components: 001 M180196 Cover Letter 002 M180196 Attachment 1 Affidavit 003 M180196 Attachment 2 Proprietary 004 M180196 Attachment 3 Non-Proprietary

- Attachments:
1. Affidavit
 2. GNF FeCrAl Lead Test Assemblies, RAJ-II Letter Authorization Request and Technical Basis – GNF Proprietary Information - Non-Public
 3. GNF FeCrAl Lead Test Assemblies, RAJ-II Letter Authorization Request and Technical Basis – Non-Proprietary Information

cc: Pierre Saverot – USNRC SFM
PLM Specification 004N1937 R3
SPM 18-052

Attachment 1

Global Nuclear Fuel - Americas LLC

AFFIDAVIT

I, **Scott P. Murray**, state as follows:

- (1) I am the Manager, Facility Licensing of Global Nuclear Fuel – Americas, LLC (GNF-A), and have been delegated the function by GNF-A of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in Attachment 2 to GNF-A's letter, M180196, Scott P. Murray to Director, Division of Spent Fuel Management, entitled GNF-A Request for Letter Authorization to Use the RAJ-II Package for GNF FeCrAl Lead Test Assemblies. GNF-A proprietary information in Attachment 2 is identified by the statement "GNF-A Proprietary Information – Non-Public".
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A relies upon the exemption from disclosure set forth in the Freedom of Information Act (FOIA), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for trade secrets (Exemption 4). The material for which exemption from disclosure is here sought also qualifies under the narrower definition of trade secret, within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (DC Cir. 1983).
- (4) The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. Some examples of categories of information that fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GNF-A's competitors without license from GNF-A constitutes a competitive economic advantage over GNF-A and/or other companies.
 - b. Information that, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.
- (5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to the NRC in confidence. The information is of a sort customarily held in confidence by GNF-A, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GNF-A, not been disclosed publicly, and not been made available in public sources. All disclosures to third parties, including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary and/or confidentiality agreements that provide for maintaining the information in confidence. The initial designation of this information as proprietary information and the subsequent steps taken to prevent its unauthorized disclosure are as set forth in the following paragraphs (6) and (7).
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, who is the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or who is the person most likely to be subject to the terms under which it was licensed to GNF-A.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist, or other equivalent authority for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GNF-A are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary and/or confidentiality agreements.

