



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

May 6, 2020

Mr. Scott P. Murray, Licensing Manager
Global Nuclear Fuel - America
3901 Castle Hayne Road
P.O. Box 780
Wilmington, NC 28402

SUBJECT: GLOBAL NUCLEAR FUELS – AMERICA LLC: SECOND REQUEST FOR SUPPLEMENTAL INFORMATION REGARDING THE LICENSE AMENDMENT REQUEST TO INCREASE ENRICHMENT LIMITS TO LESS THAN OR EQUAL TO 8 PERCENT U-235 (ENTERPRISE PROJECT IDENTIFIER L-2019-LLA-0245)

Dear Mr. Murray:

By letter dated October 31, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19304B898), Global Nuclear Fuel – Americas LLC (GNF-A) submitted a request to amend Chapter 1.0, “General Information,” and Chapter 5.0, “Nuclear Criticality Safety,” of SNM-1097. The request was further supplemented by a letter containing criticality information on November 27, 2020 (ADAMS Accession No. ML19331A444), and a response to a request for supplemental information dated February 27, 2020 (non-public ADAMS No. ML20058G604). The information in these three submittals does not provide sufficient information for the NRC staff to proceed with a formal review. The submittals lack a safety basis consistent with the requirements in Title 10 of the *Code of Federal Regulations* (CFR), Section 70.22, “Contents of applications,” to support the amendment request.

The proposed amendment requests an increase in GNF-A’s authorized enrichment limit, specified in license condition 6(A), from 5 to 8 weight percent U-235, and seeks validation of the licensee’s minimum margin of subcriticality to support the enrichment increase. The NRC staff understands that the proposed amendment would have significant impacts on operations and safety systems throughout the facility. The GNF-A submittals state that a detailed analysis of impacts throughout the plant is under development. To proceed with the review, the NRC staff needs additional information on the projected impacts and program commitments to determine adequate safety. The commitment by GNF-A to follow the previously approved change management processes and 10 CFR 70.72(c) does not meet this requirement.

The NRC staff has developed a list of additional technical information necessary for the staff to accept the submittal for formal review. The staff held a conference call with GNF-A staff on April 23, 2020 to discuss the attached second round of requests for supplemental information (RSIs) and to ensure mutual understand of the information needed. Feedback from the call has been incorporated into the enclosure to improve clarity.

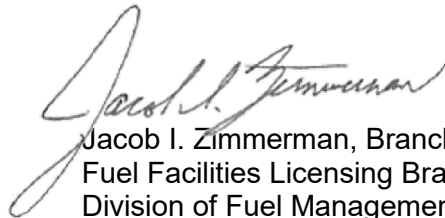
Please use the following process for developing a response to the RSIs. Within 30 days from the date of this letter, provide a written response via email to the NRC stating a proposed schedule to provide a draft response to the RSIs. Once a draft of the RSIs are developed, GNF-A should schedule and hold a conference call with the NRC staff to seek alignment on the proposed responses. After the alignment meeting, GNF-A can submit the responses formally.

As previously stated, the GNF-A submittal was assigned Enterprise Project Identifier (EPID) L-2019-LLA-0245. Upon acceptance, the NRC staff will provide a projected completion date for the formal review and cost estimates. To date, the NRC staff has expended approximately 182 hours on this acceptance review.

In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning this letter, please contact Mr. Matthew Bartlett of my staff at 301-415-7506, or via e-mail at Matthew.Bartlett@nrc.gov.

Sincerely,



Jacob I. Zimmerman, Branch Chief
Fuel Facilities Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 70-1113
License No. SNM-1097

Enclosure:
Second Request for Supplemental
Information

cc: gnfa@listmgr.nrc.gov

SUBJECT: GLOBAL NUCLEAR FUEL – AMERICAS LLC: SECOND REQUEST FOR SUPPLEMENTAL INFORMATION REGARDING THE LICENSE AMENDMENT REQUEST TO INCREASE ENRICHMENT LIMITS TO LESS THAN OR EQUAL TO 8 PERCENT U-235 (ENTERPRISE PROJECT IDENTIFIER L-2019-LLA-0245)

200

DATED: May 6, 2020

DISTRIBUTION:

DFM r/f TNaquin, DFM/FFLB, RWilliams, RII, LPitts, RII
MRuffin, RII, ASmith, DFM/NARAB, JMunson, DFM/FFLB

ADAMS Accession No.: ML20092G719

OFFICE	DFM/FFLB/PM*	DFM/FFLB/LA*	DFM/NARAB/BC*	DFM/FFLB/BC*	DFM/D*
NAME	MBartlett	ELee	KArmstrong	JZimmerman	AKock
DATE	04/28/20	04/29/20	04/28/20	05/06/20	05/06/20

OFFICIAL RECORD COPY

Second Request for Supplemental Information

In the first round of RSI's dated February 27, 2020, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20058G604, non-public) Global Nuclear Fuels – America (GNF-A) states regarding their amendment request to increase the enrichment limit from 5 to 8 weight percent (amendment) that, “the degree of impact is actively being assessed.” GNF-A also stated, “revisions will be approved and issued when the necessary facility and document changes are implemented to support processing of uranium enriched up to 8.0 wt. percent U-235.” The NRC staff does not expect to review a detailed analysis of plant changes due to the proposed amendment. However, the NRC staff needs GNF-A to provide an overview of the projected plant changes and describe the reasons the changes can be implemented with adequate safety for each technical area of the license.

The GNF-A submittal must demonstrate that the proposed plant changes necessary to support the amendment comply with Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 70.22(a), including: the impact on operations, training, equipment, procedures, for the major technical areas (e.g., General Facility Information, Integrated Safety Analysis, Radiation Safety, Criticality Safety, Fire Safety, Emergency Management, Environmental Review, Decommissioning, Management Measures, Material Control & Accounting, Physical Security). The request for supplemental information (RSI) response must demonstrate sufficient safety basis regarding the proposed plant changes for the NRC staff to make the findings required by 10 CFR 70.23, (i.e., changes to support the amendment provide adequate safety). The safety basis can include references to existing documentation and make use of programmatic commitments.

Based on the previous RSI response, the NRC staff understands GNF-A will use the 10 CFR 70.72(c) process to analyze and implement plant changes that are not part of the proposed amendment. However, consistent with 10 CFR 70.72(d)(1), amendments must be reviewed and approved by the NRC staff, including the changes necessary to ensure adequate safety. Analyzing plant changes that support the amendment under the 10 CFR 70.72(c) change process (applicable for non-amendments) does not demonstrate compliance with 10 CFR 70.22(a), and is not sufficient for the NRC staff to make a determination of adequate safety consistent with 10 CFR 70.23.

Consistent with the requirements in 10 CFR 70.22(a), provide the following information.

1. Facility Overview

Provide a summary, nontechnical narrative update of the impact of the proposed amendment on plant processes to acquire, deliver, receive, possess, produce, use, process, transfer, or store SNM.

State if GNF-A plans to modify all or part of existing process lines or create new process lines to support the amendment. Confirm that the entire facility will be analyzed to operate at 8 wt percent.

Summarize the projected impacts of the proposed amendment on the chemical and physical forms of SNM in process; the maximum amounts of SNM in process in various building locations; and changes in the types, amounts, and discharge points of waste materials discharged to the environment from the processes.

Describe how the proposed change in enrichment impacts the raw materials byproducts, wastes, and finished products of the facility. This information should include any updates on expected levels of trace impurities or contaminants (particularly fission products or transuranic elements) characterized by identity and concentration. In addition, this summary should identify any significant modification in the proposed moderator or reflector with special characteristics, such as beryllium or graphite.

2. Radiation Safety

State if the proposed amendment will result in modifications to the radiation protection program to comply with the 10 CFR Part 20 doses to the public, the workers, or the environment due to the proposed amendment. State that projected changes to the policies, procedures, and controls to support the proposed amendment will be: (1) implemented consistent with the radiation protection program, (2) reviewed and approved by the radiation protection function, and (3) maintained ALARA. Also, identify the portions of the Integrated Safety Analysis (ISA) Summary that will be applicable for radiation protection program for the proposed plant changes and discuss any updates necessary to support the process safety analysis and controls for radiation protection.

Provide appropriate updates for the following areas that may be impacted by plant changes to support the proposed amendment:

- training and qualification for the radiation protection organization
- facilities, equipment, and procedures to effectively implement the program
- policies and procedures to ensure that occupational radiation exposures are maintained ALARA and that such exposures are consistent with the requirements of 10 CFR 20.1101.
- written, approved procedures to carry out activities related to the radiation protection program.
- accuracy, effectiveness, and adequacy of the radiation protection training program curriculum and instructors.
- ventilation and containment systems in areas of the plant identified as having potential airborne concentrations of radionuclides.
- radiation survey and monitoring programs that are necessary to comply with the requirements of 10 CFR Part 20 and explain why they are reasonable to evaluate the magnitude and extent of radiation levels, the concentrations or quantities of radioactive material, and the potential radiological hazards.
- impacts on the personnel monitoring program for external and internal occupational radiation exposures, (e.g., types of personal dosimeters, administrative exposure levels, survey's, air-sampling program)

Proposed changes to the accident sequences should be sufficiently described and detailed to allow an understanding of the radiological hazards (e.g., radioactive materials at risk) and the release mechanism. The applicant should provide adequate descriptions of the impacts of the proposed amendment on radiological consequences (i.e., exposure estimates) for any new credible high and intermediate consequence events identified in the ISA Summary. The reviewer should verify that the exposure estimates remain reasonable, based on the sequence description and the radioactive materials involved.

3. Chemical Safety

Discuss expected changes, if any, in chemical safety due to the proposed amendment. Identify the sections of the ISA Summary, if any, that will be updated for chemical safety to support the proposed amendment.

4. Fire Safety

Discuss whether planned changes by GNF-A to support the proposed amendment to process 8 wt percent enriched material will impact fire safety. Demonstrate that acceptable commitments regarding fire safety will be provided by GNF-A for:

- Fire safety management, including: safety organization, engineering review, and fire prevention; inspection, testing, and maintenance; pre-fire plans; and personnel qualifications, drills, and training.
- Fire risk identification, including: the fire hazards analysis and the integrated safety analysis.
- Facility design, including: information on building construction, fire areas, life safety, ventilation, and electrical system design; and the consideration of competing requirements among fire safety and security, criticality, and environmental concerns.
- Process fire safety, including: design considerations to prevent an accident or to mitigate the consequences of an accident resulting from the use of process chemicals, combustible metals, flammable and combustible liquids and gases, high-temperature equipment, hot cells and glove boxes, and laboratories.
- Fire protection systems, including: fire detection, alarm, and suppression systems; portable extinguishers; water supplies; and emergency response organizations.

5. Emergency Plan:

Discuss projected changes in the emergency plan due to the proposed amendment. State the projected impact on the emergency plan for the following areas: the types of accidents, the detection of accidents, the mitigation of consequences, and the assessment of releases. Discuss changes important to emergency management for the proposed amendment including: the type, form, and quantities of radioactive materials that are normally onsite, by location (use and storage) and building, and hazardous characteristics (e.g., exposure rates). Describe how GNFA will ensure that the site Emergency Plan remains effective at the higher enrichment level.

Discuss the updates to the evaluation for the maximum public exposure identified in the emergency plan and the impacts the proposed amendment has on the following:

- the maximum source term;
- the facility design or items relied on for safety;
- the maximum calculated exposure to a member of the public at the facility boundary.

Discuss the projected impact of the proposed amendment on the general types of accidents identified in the ISA Summary for which protective actions may be needed and indicate if there are any projected necessary modifications to the emergency plan.

Provide a discussion of changes that are necessary in the emergency planning analysis including:

- the process and physical location(s) where the accidents could occur;

- the accident sequence that has the potential for the greatest radiological impact;
- figure(s) projecting doses as a function of distance and time for various meteorological stability classes, including a description of how the applicant projected such doses (e.g., computer models and assumptions)

State that the emergency scenarios associated with the proposed amendment will be updated and the emergency plan will be updated as necessary.

6. Decommission Costs

Identify additional decommissioning costs, if any, associated with the proposed amendment. Account for new process lines, equipment, and disposal of UF₆ enriched to 8 wt percent (Note: Is the final dispositioning of enriched UF₆ considered as an asset?) For significant changes in the cost estimates, discuss how the cost figures were determined, providing documentation as needed.

7. Material Control & Accounting:

Discuss whether there are projected changes in the Fundamental Nuclear Material Control (FNMC) plan due to the proposed amendment. The NRC staff understand that the Category III Material Control & Accounting (MC&A) requirements remain applicable for GNF-A under the proposed amendment. For completeness, please state that the GNF-A staff reviewed the MC&A program and discuss the findings (e.g., identify what, if any, are the impacts on the FNMC plan).

8. ISA and ISA Summary:

Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraphs 70.23(a)(3) and 70.23(a)(4) state that an amendment for a license will be approved if the applicant's proposed equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.

In addition to 10 CFR 70.23, 10 CFR 70.66 states that an amendment for a license will be approved if the staff determines that the licensee complies with 10 CFR 70.60–70.65.

The licensee's response to the staff's RSIs 1–3, dated February 27, 2020, indicates that the licensee has not completed most of the evaluations to fully demonstrate compliance with 10 CFR 70.60–70.65 and to describe the proposed equipment, facilities, and procedures that will change as a result of possessing and utilizing 8.0 weight percent (wt. percent) U-235. The licensee did provide a general discussion of processes, equipment, and items relied on for safety (IROFS) that may be modified, including process tank dimensions, IROFS mass limits, and filtering process designs.

- 8.A Enumerate, individually or by groups, the system(s), structure(s), component(s) (SSCs), process(s) or procedure(s) impacted by the proposed amendment and for each provide the following information:
- a) A summary of the anticipated changes to the ISA for each of the process node groups described in the ISA Summary, for example, operational limits or physical configuration of IROFS, accident likelihoods or consequences;
 - b) The node groups that have been prioritized for reanalysis at 8 wt. percent enrichment based on the potential ISA impacts. For these prioritized node groups, describe the status of supporting safety analysis currently under development; and

c) The evaluation priority, for example, high, medium, or low based on associated risk or anticipated evaluation schedule.

The staff will use this information to guide future requests for additional information that support the determination that the licensee meets 10 CFR 70.23 and 70.66.

- 8.B The staff recognizes the licensee may need to perform many evaluations that necessitate significant changes to the facility. Describe any programmatic changes (e.g., changes to program elements or associated procedures, process safety information, ISA team or team qualifications) to the safety and ISA programs that may be adjusted to accommodate the evaluations and the associated changes. For instance, Section 3.5.1 of the current license application states that changes requiring approval under 70.72(c) will be submitted with a revised ISA Summary; however, a revised ISA Summary was not submitted, and the licensee's response to RSI-3, Round 1 states that ISA Summary revisions will be made when re-evaluations at 8.0 wt. percent U-235 are complete. State if there will be other programmatic changes such as the personnel that perform the ISA or the procedures to maintain the ISA in a current state. The response should address all potentially affected safety and ISA program areas.
- 8.C Describe any programmatic elements of the safety and ISA programs that depend on the assumption of 5.0 wt. percent U-235. For instance, are the current ISA team qualifications based on knowledge of operations only at 5.0 wt. percent U-235, (i.e., as stated in Section 3.5.2 of the current license application), "hazards that are known to exist in the study area." Or is the graded approach to assigning management measures dependent on the assumption of operations at 5.0 wt. percent U-235? The response should address all potentially affected safety and ISA program areas.