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Attachment 1 contains **PROPRIETARY** information

GNRO-2014/00052

September 10, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Grand Gulf Nuclear Station Response to Electronic Request for Additional Information Regarding Maximum Extended Load Line Limit Plus Amendment Request, dated 7/29/2014.
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCES: 1 Electronic Request for Additional Information Regarding "Maximum Extended Load Line Limit Plus" Amendment Request Dated 7/29/2014 (TAC MF2798)
2 Entergy Letter, "Maximum Extended Load Line Limit Analysis Plus (MELLLA+) License Amendment Request," GNRO-2013/00012, dated September 25, 2013 (ADAMS Accession No. ML13269A140).

Dear Sir or Madam:

Entergy Operations, Inc. is providing in the Attachment a response to the Reference 1 Request for Additional Information (RAI).

Attachment 1 contains proprietary information as defined by 10 CFR 2.390. General Electric-Hitachi (GEH), as the owner of the proprietary information, has executed the enclosed affidavit in Attachment 3, which identifies that the attached proprietary information has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information was provided to Entergy in a GEH transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the attached such that the affidavit remains applicable. GEH hereby requests that the attached proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17. Information that is not considered proprietary is provided in Attachment 2. Attachment 3 contains an affidavit which identifies that the information contained in Attachment 1 has been handled and classified as proprietary to GEH. On behalf of GEH, Entergy requests that Attachment 1 be withheld from public disclosure in accordance with 10 CFR 2.390(b)(1).

**When Attachment 1 is removed from this letter, the entire document is
NON-PROPRIETARY**

This letter contains no new commitments. If you have any questions or require additional information, please contact Mr. James Nadeau at 601-437-2103.

I declare under penalty of perjury that the foregoing is true and correct; executed on September 10, 2014.

Sincerely,



TC/ras

Attachments:

1. Responses to Request for Additional Information dated 7/29/2014 Pertaining to License Amendment Request – Maximum Extended Load Line Limit Plus (Proprietary Version)
2. Responses to Request for Additional Information dated 7/29/2014 Pertaining to License Amendment Request – Maximum Extended Load Line Limit Plus (Non-Proprietary Version)
3. GEH Affidavit for Attachment 1

cc: with Attachments

U.S. Nuclear Regulatory Commission
ATTN: Mr. Marc L. Dapas
Regional Administrator, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

U.S. Nuclear Regulatory Commission
ATTN: Mr. A. Wang, NRR/DORL
Mail Stop OWFN/8 G14
Washington, DC 20555-0001

NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

State Health Officer
Mississippi Department of Health
P. O. Box 1700
Jackson, MS 39215-1700

Attachment 2

GNRO-2014/00052

RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION DATED 7/29/2014
PERTAINING TO LICENSE AMENDMENT REQUEST – MAXIMUM EXTENDED LOAD LINE
LIMIT PLUS

(NON-PROPRIETARY VERSION)

This is a non-proprietary version of Attachment 1 of GNRO-2014/00052 which has the proprietary information removed. Portions of the document that have been removed are indicated by an open and closed bracket as shown here [[.....]].

1. *Section 10.5.3 of Attachment 4 states "Although there are no new operator actions, the higher core power after a RPT [recirculation pump trip] may reduce operator action timing for ATWS [Anticipated Transient Without Scram] level/power control and potential increased SRV [safety relief valve] cycling." Please explain the changes to the timing of operator response as well as any increase to operator workload as result of the proposed license amendment.*

Response: There are no specific timing changes imposed on operators and the changes to the operator response timing assumed in the ATWS analyses do not translate to increased operator workload.

As discussed in 10.5.3, the operator responses to anticipated occurrences, accidents, and special events for EPU with MELLLA+ conditions are basically the same as for EPU (without MELLLA+) conditions. For the ATWS events EP-2A directs operator action to operators to control reactor pressure by cycling SRVs and to reduce reactor water level. A target water level of -70 inches (wide range) is provided initially to reduce the core subcooling. Then, if the pool continues to heat up, a further level reduction to -167 inches (compensated fuel zone) is performed to reduce core power. For the ATWS-Instability analysis, the timing of the level reduction is an assumption in the analysis.

The proposed time of 90 seconds for operator manual action to initiate a reduction in reactor level during an ATWS was confirmed to be acceptable by reviewing the simulator runs performed for EPU. The NRC reviewed the pre-EPU ATWS simulations on-site and the post-EPU ATWS runs were submitted to the Staff for information in GNRO-2012/00017. The two scenarios evaluated in GNRO-2012/00017 are the MSIV Closure and Turbine Trip events. From this review it was established that fuel zone level reduction occurs rapidly and is typically completed to the first target level within the first minute. Thus, an assumed start of the reactor level reduction of 90 seconds was found to be conservative relative to the observed operator performance.

Ref: Design Input Request T0902, DRF 0000-0127-2142

2. *Has an operating experience review been performed, including plant-specific condition reports, Licensee Event Reports, INPO reports, and other relevant sources?*

Response: Yes, an OE review has been performed. No plant-specific condition reports or MELLLA+ specific LERs or INPO reports have been identified. Entergy has solicited and received some operating experience from the Monticello Station related to operation with MELLLA+. Examples of the multiple OE documents provided by Monticello are as follows: [[.....]]

Entergy performed searches for related MELLLA+ operating experience at the World Association of Nuclear Operators (WANO) website and at the Institute of Nuclear Power Operations (INPO) website. No specific information related to extended load line operation (including MELLLA and MELLLA+) was found searching the WANO web site.

The INPO website contained operating experience only related to MELLLA, and not to MELLLA+.

3. *What has been or will be done to assure ATWS response actions can be performed within the time limits of the relevant analyses? Are any changes necessary to the task analysis to ensure that tasks can be completed as described?*

Response: See response to Question #1 for assurance that ATWS response actions can be performed within the time limits. No changes are necessary to the task analysis to ensure that tasks can be completed as described.

4. *Please describe any changes to staffing or qualifications needed to support the proposed license amendment.*

Response: No staffing or qualification changes were identified during the development of the MELLLA+ LAR. Operating crew responses to postulated events were simulated based on current staffing requirements. Some changes related to the operator training program are discussed in response to question #9 of this RAI response.

5. *Section 10.5.3 of Attachment 4 indicates that there are no significant changes to operator actions, however, it also says indicates that certain actions "become more important." In what way are these actions more important and how are they treated differently?*

Response: The design limit for the containment pressure is 15 psig. It is clear that the margin to the containment design limits under the MELLLA+ condition is significantly reduced compared to that of CLTP. Under the circumstance, the mitigation actions, i.e., SLCS initiation, ADS inhibit, and level reduction, become more important. The operator mitigation actions, "SLCS initiation, ADS inhibit, and level reduction," are primarily intended to mitigate the impact of the steam discharge into the suppression pool through the Safety/Relief Valves (SRVs). In table 9-6, the peak suppression pool temperature for the CLTP is [[.....]] while the peak value for the MELLLA+ is [[.....]], against a design limit of 210°F for the suppression pool temperature. Similarly, the peak containment pressure for the CLTP and MELLLA+ conditions are [[.....]] and [[.....]], respectively.

For the ATWS events and the ATWS-Instability event in particular, the timing of specific operator actions (i.e., level reduction) are important to ensure that analysis margins are maintained. As a result, as mentioned in section 10.6, enhanced training on ATWS event mitigation, to include margin reduction and the importance of actions, in the MELLLA+ domain will be conducted.

Ref: Design Input Request T0902, DRF 0000-0127-2142
and MELLA+ SAR Section 10.6

6. *What are the performance shaping factors (PSFs) that can affect the performance of ATWS response operator actions? What are the likely errors? Is there sufficient time available for recovery actions after errors?*

Response: As discussed in the response to Question 1 of this RAI response, simulator runs were used to establish conservative ATWS operator response times. As a result, PSFs were not used.

Likely errors include misinterpretation of indications, implementation of the procedure steps improperly. If these are committed, recovery actions include oversight, procedural direction, and indication of plant status.

Although no specific sensitivity studies were performed, the available time to identify errors and the significant margins to the ATWS acceptance criteria allow errors to be identified and corrected. There is sufficient time available for recovery actions after errors because Operator response associated with an ATWS leads to reliable, expedient operator actions. Safety-related, redundant indications directly available to the operators are used for diagnosing the event. The operator responses are proceduralized and routinely practiced in the simulator. All response actions are performed from the front panels in the control room and there are no adverse environmental issues or special requirements (such as tooling).

7. *Several sections (such as sections 3.1 and 5.3 of Attachment 4) mention that there are limited effects on controls and instrument setpoints as a result of MELLLA+ operation. What changes to Human-System Interface (HIS) are necessary to support these changes (i.e. changes to ranges, labels on displays, etc.)?*

Response: Changes to HIS necessary to support the changes include removing 8 jumpers from the PRNM panels and appropriate changes to the power flow map (see map below). Two jumpers must be removed in each PRNM panel (1H13P669, 1H13P670, 1H13P671 & 1H13P672) to enable the OPRM Confirmation Density Algorithm (CDA) trips. There are a total of 8 jumpers, 2 per panel, and shown on drawings E1173-15, -16, -17 & -18.

[[.....]]

8. *Please describe any changes to operating procedures (or alarm procedures) needed to support the proposed license amendment (such as water level control procedures as described in Section 9.3.1.1 of Attachment 4).*

Response: The following procedures were identified as requiring minor changes to support the proposed MELLLA+ LAR.

Procedure Number	Title	Category
02-S-01-27	Operations Philosophy	Operations Section Procedure
02-S-01-31	Control Room Rounds	Operations Section Procedure
02-S-01-40	EP Technical Basis	Operations Section Procedure
03-1-01-1	Cold Shutdown to Generator Carrying Minimum Load	Integrated Operating Instruction
03-1-01-2	Power Operations	Integrated Operating Instruction
04-1-01-B33-1	Reactor Recirculation System	System Operating Instruction
05-1-02-III-3	Reduction in Recirculation System Flow Rate	Off-Normal Event Procedure
17-S-02-400	Rod Sequence and Movement Control	Rx Engineering Instruction

Procedure changes associated with setpoint changes necessary to implement the amendment will be identified during implementation of the related design changes in accordance with the GGNS-approved change control process. The change control process includes a review by operations and training personnel. Training and implementation requirements are identified and tracked, including effects on the simulator.

9. *What validation activities have been done to ensure that operators can complete all of the necessary tasks within the allowable time frames? Has any validation occurred to ensure that the changes to the HSI (power/core flow maps, alarms, instrument setpoints) and procedures are sufficient for task completion?*

Response: As discussed in SAR section 10.6, training required will be determined through an accredited training program. The training to operate GGNS following the MELLLA+ operating domain expansion will be conducted prior to operation in the MELLLA+ domain in accordance with the Systematic Approach to Training (SAT) process. The classroom training will cover various aspects of MELLLA+ operating domain expansion, including changes to the TSs, changes to the power/flow map, changes to important setpoints, changes associated with the confirmation density stability solution, changes to plant procedures, and startup test procedures. The classroom training may be combined with simulator training for normal operational sequences unique to operation in the MELLLA+ domain. Because the plant dynamics do not change substantially for operation in the MELLLA+ domain, specific simulator training on transients is not anticipated.

Attachment 3

GNRO-2014/00052

GEH Affidavit for Attachment 1

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **James F. Harrison**, state as follows:

- (1) I am the Vice President, Regulatory Affairs, Fuels Licensing, of GE-Hitachi Nuclear Energy Americas LLC ("GEH"), and have been delegated the function 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 Enclosure 1 of GEH letter, GEH-GGNS-AEP-643, "GEH Response to MELLLA+ NRC RAI 5," dated August 20, 2014. The GEH proprietary information in Enclosure 1, which is entitled "GEH Response to NRC RAI 5 in Support of GGNS MELLLA+ LAR," is identified by a dotted underline inside double square brackets. [[This sentence is an example.^{3}]] In each case, the superscript notation ^{3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the *Freedom of Information Act* ("FOIA"), 5 U.S.C. Sec. 552(b)(4), and the *Trade Secrets Act*, 18 U.S.C. 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 F.2d 871 (D.C. Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F.2d 1280 (D.C. 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 GEH's competitors without license from GEH constitutes a competitive economic advantage over 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;
 - c. Information that reveals aspects of past, present, or future GEH customer-funded development plans and programs, resulting in potential products to GEH;
 - d. Information that discloses trade secret or potentially patentable subject matter for which it may be desirable to obtain patent protection.
- (5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GEH,

GE-Hitachi Nuclear Energy Americas LLC

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 GEH, 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 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 GEH.
- (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 GEH 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 or confidentiality agreements.
- (8) The information identified in paragraph (2), above, is classified as proprietary because it contains the details of GEH methodology. These methods, techniques, and data along with their application to the design, modification, and analyses were achieved at a significant cost to GEH.

The development of the evaluation processes along with the interpretation and application of the analytical results is derived from the extensive experience databases that constitute a major GEH asset.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GEH's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GEH. The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial. GEH's competitive advantage will be lost if its competitors are able to use the results of the GEH experience to normalize or verify their

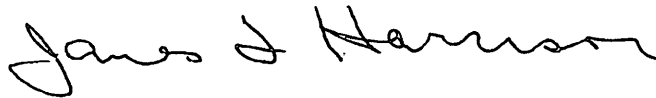
GE-Hitachi Nuclear Energy Americas LLC

own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GEH would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GEH of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 20th day of August 2014.

A handwritten signature in black ink, appearing to read "James F. Harrison". The signature is fluid and cursive, with the first name "James" and last name "Harrison" clearly distinguishable.

James F. Harrison
Vice President, Fuel Licensing, Regulatory Affairs
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