



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

**SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION**  
**RELATED TO AMENDMENT NO. 141 TO FACILITY OPERATING LICENSE NO. NPF-29**

**ENERGY OPERATIONS, INC., ET AL.**

**GRAND GULF NUCLEAR STATION, UNIT 1**

**DOCKET NO. 50-416**

**1.0 INTRODUCTION**

By letter dated July 20, 1998 (Reference 1), supplemented by letter dated June 29, 1999 (Reference 5), Entergy Operations, Inc., et al. (the licensee), submitted a request for changes to the Grand Gulf Nuclear Station, Unit 1 (GGNS), Technical Specifications (TSs). The changes would revise the TSs to allow for transition to the reactor core long-term stability solution known as Enhanced Option 1-A (I-A). I-A consists of several modifications to the plant hardware and operating procedures when, taken as a whole, provide a means for reliably detecting and avoiding reactor instabilities, which could challenge plant safety limits if left alone.

**2.0 BACKGROUND**

The modification of the current plant TSs consists of eliminating the procedures that are required to conform to the stability Interim Corrective Actions and inserting the procedures (including hardware surveillance requirements and operator actions) to implement I-A. Generic I-A TSs were reviewed by the staff and approved as NEDO-32339, Supplement 4 (Reference 2). Errata to this document (Reference 3) were submitted October 20, 1997, and approved by the staff in Reference 4. This safety evaluation will evaluate the adequacy of the implementation of the guidance in NEDO-32339, Supplement 4.

**3.0 EVALUATION**

The staff compared the proposed I-A TS pages presented in Reference 1 for GGNS with those approved in NEDO-32339, Supplement 4. The following sections were either modified or added:

- a. A definition of the Fraction of Core Boiling Boundary (FCBB) was added to Section 1.1 of the TSs. The FCBB limits the length of the two-phase column in the core, which has a stabilizing effect on the reactor. The staff finds this change is consistent with Reference 2 and, therefore, is acceptable.
- b. A limiting condition for operation (LCO) 3.2.4, including actions and surveillance requirements, is added for the FCBB requiring that it be maintained below 1.0 when the plant is operating in the restricted region or the flow biased average power range

monitor scram line is in a "setup" mode. The staff finds this change consistent with Reference 2 and, therefore, is acceptable.

- c. The notes for Surveillance Requirement (SR) 3.3.1.1.10, surveillance for reactor protection system (RPS) instrumentation, were expanded to add two RPS functions where components are excluded from the surveillance. The staff finds this change is consistent with Reference 2 and, therefore, is acceptable.
- d. SR 3.3.1.1.16, SR 3.3.1.1.17, and SR 3.3.1.1.18 have been added to require proper checking of the new I-A hardware. The surveillance intervals have been appropriately chosen considering that the new hardware is digital and performs self-checks. The staff finds this change consistent with Reference 2 and, therefore, is acceptable.
- e. Table 3.3.1.1-1 has been modified by adding Function 2.d and footnote (b). Function 2.d adds the surveillance's for the Flow Biased Simulated Thermal Power - High and footnote (b) refers to the Core Operating Limits Report (COLR) for the appropriate cycle-specific limits. The staff finds this change is consistent with Reference 2 and, therefore, is acceptable.
- f. LCO 3.3.1.3 has been added for the Period Based Detection System (PBDS). The PBDS is a defense in depth feature of I-A but certain actions are required when it detects an instability. The staff finds this change is consistent with Reference 2, and, therefore, is acceptable.
- g. The interim corrective actions have been removed from LCO 3.4.1. This required the modification to the LCO statement, removal of actions B, C, D, and E, removal of SR 3.4.1.2, and deletion of Figure 3.4.1-1. The staff finds these changes acceptable because they are no longer needed and are consistent with Reference 2.
- h. Items a.4, a.5, and a.6 were added to Section 5.6.5, which describes the COLR. These items will allow the use of the cycle-specific operating limits, which define the operating regions. The staff finds this change consistent with Reference 2 and, therefore, is acceptable.
- i. Reference 21, NEDO-32339-A, "Reactor Stability Long Term Stability Solution: Enhanced Option I-A," and Supplements 1 - 4, was added to the list of references in the COLR. This is the reference to the approved I-A design being used by the licensee. The staff finds this change is consistent with Reference 2 and, therefore, is acceptable.

A discussion with justification of all of the listed TS changes is included in Reference 1. The licensee has appropriately modified its TSs in accordance with the outline presented in Reference 2.

The staff has concluded that the licensee has adequately implemented the proposed TSs necessary to implement long-term stability solution Enhanced Option 1-A.

#### **4.0 STATE CONSULTATION**

In accordance with the Commission's regulations, the Mississippi State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### **5.0 ENVIRONMENTAL CONSIDERATION**

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (64 FR 46432 dated August 25, 1999). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### **6.0 CONCLUSION**

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Anthony P. Uises

Date: January 19, 2000

**REFERENCES**

1. Letter from J. Hagan (Entergy) to USNRC, "Enhanced Option 1-A Core Stability" Proposed Amendment to the Operating License (LDC 1997-02), July 20, 1998.
2. NEDO-32339-A, Supplement 4, "Reactor Stability Long Term Stability Solution: Enhanced Option 1-A Generic Technical Specifications," December 1996.
3. Errata to NEDO-32339-A, Supplement 4, October 20, 1997.
4. SER for NEDO-32339, Revision 1, February 25, 1998.
5. Letter from W.A. Eaton (Entergy) to USNRC, "Enhanced Option 1-A Core Stability" Supplement to Proposed Amendment to the Operating License (LDC 1997-02), June 29, 1999.

Mr. William A. Eaton  
 Vice President, Operations GGNS  
 Entergy Operations, Inc.  
 P. O. Box 756  
 Port Gibson, MS 39150

January 19, 2000

**SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - ISSUANCE OF AMENDMENT  
 RE: REACTOR CORE STABILITY ENHANCED OPTION 1-A  
 (TAC NO. MA3406)**

Dear Mr. Eaton:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 141 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station (GGNS), Unit 1. This amendment revises the Technical Specifications (TSs) in response to your application dated July 20, 1998, as supplemented by letter dated June 29, 1999.

The amendment incorporates the TS changes necessary for implementation of the Boiling Water Reactor Owners' Group Reactor Stability Long-Term Solution, Enhanced Option 1-A.

You are requested to implement this amendment within 120 days of the amendment date, and to inform the staff when these operational changes, including associated component modifications, have been completed.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,  
 /RA/

S. Patrick Sekerak, Project Manager, Section 1  
 Project Directorate IV & Decommissioning  
 Division of Licensing Project Management  
 Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:

1. Amendment No. 141 to NPF-29
2. Safety Evaluation

cc w/encis: See next page

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