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Battelle

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July 20, 1984

Mr. Carl Berlinger
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Berlinger:

SUBJECT: TDI DIESEL ENGINE PROJECT (FIN B2963)--TRANSMITTAL OF
"REVIEW AND EVALUATION OF TRANSAMERICA DELAVAL INC.
DIESEL ENGINE RELIABILITY AND OPERABILITY GRAND GULF
NUCLEAR STATION, UNIT 1", DATED JULY 20, 1984,
PNL-5201

Enclosed for your use are 10 copies of the subject PNL report and two additional copies for the NRC public document reading room. We are sending two copies directly to DOE's Technical Information Center. Other copies also have been distributed as noted on the last page of the report.

Because of the short time available to prepare this report to meet NRC schedules, the report was prepared on-site at the NRC offices. Accordingly, NRC review and concurrence was concomitant with the preparation.

We plan to have PNL-consultant Adam Henriksen and myself available at NRC on July 31 to respond to questions that the Commissioners may raise. Please advise us of any changes in the schedule that may occur.

Sincerely,

David A. Dingee
PNL Diesel Engine O/R Project

Concurrence:

W. W. Laity
PNL Project Manager

DAD/srf

Enclosures

cc: As noted on distribution
for report

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

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MAR 8 1984

MEMORANDUM FOR: R. J. Mattson, Director
Division of Systems Integration, NRR

THRU: L. S. Rubenstein, Assistant Director *or for*
for Core and Plant Systems, DSI

FROM: C. H. Berlinger, Chief
Core Performance Branch, DSI

SUBJECT: RE-REVIEW OF GRAND GULF TECHNICAL SPECIFICATIONS

Reference: 1. Memorandum from R. J. Mattson to R. Houston, et al,
dated February 27, 1984, Subject: Re-Review of Grand
Gulf Technical Specifications.

The Core Performance Branch has completed the re-review of Grand Gulf
Technical Specifications as requested by Reference 1. Enclosed is a
list of specifications reviewed. Those specifications listed for which
no comments are enclosed are acceptable as is.

C. H. Berlinger
C. H. Berlinger, Chief
Core Performance Branch, DSI

Enclosure:
As stated

cc: L. Rubenstein
D. Eisenhut
T. Novak
R. Capra
D. Brinkman
C. Thomas

Contact: S. Sun, CPB:DSI
X-29499

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ENCLOSURE 1

Technical Specifications Re-Review By The Core Performance Branch for Grand Gulf Unit 1

I. Definitions:

- 1.2 Average Planar Exposure
- 1.3 Average Planar Linear Heat Generation Rate
- 1.7 Core Alteration
- 1.8 Critical Power Ratio
- 1.14 Fraction of Limiting Power Density
- 1.15 Fraction of Rated Thermal Power
- 1.20 Limiting Control Rod Pattern
- 1.21 Linear Heat Generation Rate
- 1.23 Maximum Fraction of Limiting Power Density
- 1.24 Minimum Critical Power Ratio
- 1.28 Physics Tests
- 1.33 Rated Thermal Power
- 1.36 Rod Density
- 1.38 Shutdown Margin
- 1.42 Thermal Power

II. Safety Limits

- 2.1.1 Thermal Power, Low Pressure or Low Flow
- 2.1.2 Thermal Power, High Pressure and High Flow
- 2.2.1 Reactor Protection System Instrumentation Setpoints
(IRM and APRM only)

III. Limiting Conditions for Operation and Surveillance Requirements

- 3/4.1.1 Shutdown Margin
- 3/4.1.2 Reactivity Anomalies
- 3/4.1.3.1 Control Rod Operability

3/4.1.3.2	Control Rod Maximum Scram Insertion Times
3/4.1.3.3	Control Rod Scram Accumulators
3/4.1.3.4	Control Rod Drive Coupling
3/4.1.3.5	Control Rod Position Indication
3/4.1.3.6	Control Rod Drive Housing Support
3/4.1.4.1	Control Rod Withdrawal
3/4.1.4.2	Rod Pattern Control System
3/4.1.5	Standby Liquid Control System
3/4.2.2	APRM Setpoints
3/4.2.3	Minimum Critical Power Ratio
3/4.2.4	Linear Heat Generation Rate
3/4.3.1	Reactor Protection System Instrumentation (IRM and APRM only)
3/4.3.6	Control Rod Block Instrumentation
3/4.3.7.6	Source Range Monitors
3/4.3.7.7	Traversing In-Core Probe System
3/4.3.7.10	Loose-Part Detection System
3/4.4.1.1	Recirculation System
3/4.4.1.2	Jet Pumps
3/4.9.1	Reactor Mode Switch
3/4.9.2	Instrumentation
3/4.9.3	Control Rod Position
3/4.9.10.1	Single Control Rod Removal
3/4.9.10.2	Multiple Control Rod Removal
3/4.10.2	Rod Pattern Control System
3/4.10.3	Shutdown Margin Demonstrations

S.6

FULL STOP

Comments

3/4.4

3.4.1.1

This Technical Specification, which provides limiting conditions (hours) for operation in natural circulation and with only one recirculation loop, is not sufficiently prescriptive to protect against the potential for thermal hydraulic instability. GE recently presented the staff with stability test data which demonstrated the occurrence of limit cycle neutron flux oscillations at natural circulation and several percents above the rated rod line. The oscillations were observable on the APRM's and were suppressed with control rod insertion. It was predicted that limit cycle oscillations would occur at the operating condition tested, however; the characteristics of the observed oscillations were different than those previously observed at other stability tests. Namely, the test data showed that some LPRMs oscillated out of phase with the APRM signal and at an amplitude as great as six times the core average.

GE is preparing a SIL for release soon to alert their plants of these new data and to recommend actions to avoid and control abnormal neutron flux oscillation. The applicant is required to change this specification to properly protect against the potential for thermal hydraulic instability.

3/4.2.3

3.2.3

No reference is given in the BASES for Figures 3.2.3-1 and 3.2.3-2. These curves are taken from NEDO-24011, Revision 4 (January 1982) but no reference to this appears in the FSAR.