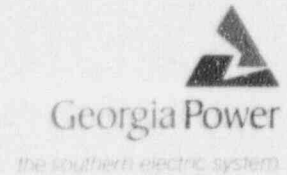


J. T. Beckham, Jr.
Vice President



September 8, 1994

Docket Nos. 50-321
50-366

HL-4684

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Edwin I. Hatch Nuclear Plant
Thermal-Hydraulic Instabilities in Boiling Water Reactors
Response to Generic Letter 94-02

Gentlemen:

By letter dated July 11, 1994, the NRC Staff issued Generic Letter 94-02 concerning recommendations for thermal-hydraulic instabilities in Boiling Water Reactors. The generic letter requests Licensees to (1) take the appropriate actions to augment procedures and training for preventing or responding to thermal-hydraulic instabilities and (2) submit to the NRC a plan and schedule describing the long-term stability solution option selected.

The enclosure provides Georgia Power Company's (GPC) response to the Generic Letter for Plant Hatch Units 1 and 2. As requested in the Generic Letter, GPC has taken action to modify procedures and conduct training for the purpose of further enhancing the operators ability to prevent or respond to thermal-hydraulic instabilities at Plant Hatch. The revisions to the Hatch Unit 2 procedures have been completed, and the training is in the final stages and will be completed by September 30, 1994. The revisions to Hatch Unit 1 procedures will be effective prior to startup from the fall 1994 Unit 1 refueling outage. As a result of GPC's involvement in the BWR Owners Group (BWROG) generic activities and early implementation of the BWROG recommendations as applicable, the actions taken specifically in response to NRC Generic Letter 94-02 have been relatively minor in nature. GPC currently plans to implement a long-term stability solution through the installation of hardware which will automatically shut down the reactor upon detection of a thermal-hydraulic instability. The modifications are planned to be operational by June 1997 on Hatch Unit 2 and by December 1997 on Hatch Unit 1. As required by the Generic Letter, within 30 days of completion of each of these scheduled actions GPC will notify the NRC in writing.

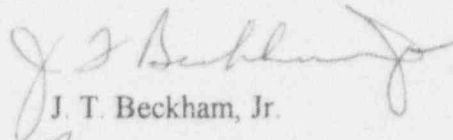
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U.S. Nuclear Regulatory Commission
September 8, 1994

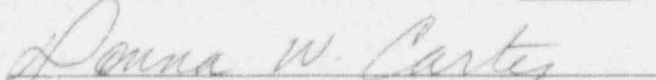
Page Two

Mr. J. T. Beckham, Jr. states he is Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company, and to the best of his knowledge and belief, the facts set forth in this letter are true.

Sincerely,


J. T. Beckham, Jr.

Sworn to and subscribed before me this 8th day of Sept., 1994.


Notary Public My Commission Expires Jan. 16, 1998

ETM/mc

Enclosure: Response to Generic Letter 94-02.

cc: Georgia Power Company
Mr. H. L. Sumner, Nuclear Plant General Manager
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. K. Jabbour, Licensing Project Manager

U.S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebnetter, Regional Administrator
Mr. B. L. Holbrook, Senior Resident Inspector - Hatch

Enclosure

Edwin I. Hatch Nuclear Plant Response to Generic Letter 94-02

Following are the GPC responses to the items listed under Reporting Requirements of Generic Letter 94-02 for Plant Hatch Units 1 and 2. Each NRC requested action is summarized prior to each GPC response.

NRC REPORTING REQUIREMENTS

1.a. - Licensee's plans and status with respect to the actions requested in the letter (1a, 1b, and 2).

NRC Requested Actions 1. a. - "Ensure that procedural requirements exist for initiation of a manual scram under all operating conditions when all recirculation pumps trip ... and ensure that operators are aware of the potential for very large power oscillations and the potential for exceeding core thermal safety limits before automatic protection systems function..."

GPC RESPONSE

Plant Hatch operating procedures for both units had previously been revised to require the initiation of a manual scram under all operating conditions when both recirculation pumps are tripped with the reactor in the STARTUP or RUN mode. The action to initiate a manual scram (i.e., place the mode switch in SHUTDOWN) is an explicit Technical Specification requirement for Hatch Unit 2. Training of licensed control room operators is being performed to augment previous training on this subject and to communicate the most recent information. The training is in the final stages and will be completed by September 30, 1994.

NCR Requested Actions 1. b. - "Ensure that factors important to core stability characteristics are controlled within appropriate limits...through procedures governing changes in reactor power, including startup and shutdown, particularly at low flow operating conditions. If it is concluded that a near-term upgrade of core monitoring capability is called for to ease the burden on operators,...inform the NRC of the schedule and technical evaluation for such upgrades found to be necessary."

GPC RESPONSE

By letter dated June 6, 1994, the BWR Owners' Group submitted revised Interim Corrective Actions (ICAs) to address potential core instability events. The BWR Owners' Group guidelines are consistent with, but more restrictive than, the ICAs which were

Enclosure

Response to GL 94-02

Thermal-Hydraulic Instabilities in Boiling Water Reactors

previously implemented as a result of the NRC Bulletin 88-07, Supplement 1 requirements. The original regions defined in the 1988 BWROG ICAs and included in the NRC Bulletin 88-07, Supplement 1, were based on stability tests and events known at the time. Subsequent work identified a sensitivity to reactor power shape and/or feedwater temperature conditions. Because of this, the June 6, 1994 BWROG guidelines incorporate an expanded stability region and power distribution control definition to strengthen the oscillation prevention feature. This, in conjunction with the detection and suppression provisions of the guidelines, provides a higher degree of protection against unacceptable power oscillations. GPC has implemented the applicable BWROG Interim Corrective Actions as follows:

The power/flow map in applicable Plant Hatch procedures defines the Region of Potential Instabilities (RPI) as core flows less than 50% of rated and core powers greater than the 70% rod line. This has been divided into two parts:

- a. Scram Region - Below 40% of rated core flow and above the 100% rod line (nominal control line). Entry into this region requires an immediate manual scram by the operators.
- b. Any Other Portion of the RPI - Below 50% of rated core flow, above the 70% rod line, and excluding the Scram Region. Upon entry into this region, operators take immediate actions to monitor nuclear instrumentation for oscillations and to exit the region by inserting control rods or increasing core flow. Since the RPI defined in applicable plant procedures encompasses both the exclusion region and the buffer zone, it is unnecessary for plant procedures to include additional controls on other factors that could affect core stability.

GPC personnel have reviewed operating and reactor engineering procedures and present training to confirm that they incorporate the applicable improved ICAs defined in the BWROG guidance. Unit 2 procedures have been revised and the Unit 1 procedures will be revised prior to startup from the upcoming Fall 1994 refueling outage.

Training has been conducted for reactor engineers and Shift Technical Advisors for the purpose of improving their ability to prevent or respond to potential thermal-hydraulic instabilities at Plant Hatch. Training for licensed control room operators is in the final stages and will be completed by September 30, 1994.

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Response to GL 94-02

Thermal-Hydraulic Instabilities in Boiling Water Reactors

The existing plant instrumentation, the procedural definition of the RPI, and the required actions provide sufficient controls on plant operations to avoid or respond to thermal-hydraulic instabilities. However, GPC does not believe the procedures and training which have been developed to address the stability issue cause unnecessary burden on operators. Consequently, no near-term plant equipment upgrades are being contemplated.

NRC Requested Actions 2. - All licensees of BWRs, except for Big Rock Point, are requested to develop and submit to the NRC a plan for long term stability corrective action.

GPC RESPONSE

GPC has elected to proceed with a solution designated as Option III of NEDO-31960, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology" (Reference 1 and 2 of NRC GL 94-02). This option introduces new plant hardware/software to provide early detection of coupled neutronic/thermal-hydraulic instabilities and to initiate an appropriate mitigating action. To complete this activity, GPC is participating with other utilities under a BWROG program to finalize the supporting Option III methodology, and has contracted with GE to develop the hardware/software design and deliver the final product. The new hardware will implement the Option III methodology as an integrated part of an advanced digital power range neutron monitoring (PRNM) upgrade using GE NUMAC equipment. To provide better overall APRM averages, improved immunity to individual detector transients, and more operational flexibility as well as reduced risk of surveillance induced trips, GPC has also elected to implement an improved 4-channel APRM system and including 2-out-of-4 PRNM trip logic into the Reactor Protection System.

The implementation schedules for both generic and Plant Hatch activities are attached. Note that these schedules are largely predicated on the timing of BWROG activities and the NRC staff reviews. Assuming the joint development activities and NRC acceptance is completed as scheduled, GPC's objective is to have the PRNM upgrade with the Option III trip in the "indicate only" mode installed at Plant Hatch Unit 2 by December 1995 and Unit 1 by June 1996. GPC will monitor and evaluate the Option III trip performance for one cycle prior to activation of the automatic trip. Subject to successful identification and implementation of any required modifications, GPC's objective is to have the automatic stability trip operational by June 1997 on Hatch Unit 2 and by December 1997 on Hatch Unit 1.

ATTACHMENT 1

GENERIC DESIGN & LICENSING ACTIVITIES (OPTION III PLUS PRNM UPGRADE)

- 1993 NRC Approval of BWROG Long Term Stability Solution Licensing Methodology, NEDO-31960 and NEDO-31960, Supplement 1
- 1993 Initiate NUMAC PRNM Equipment Design Work (GE)
- 2Q94 Deliver first NUMAC PRNM (without stability option) to non-US BWR (GE)
- 2Q94 Initiate Option III design into NUMAC PRNM (GE)
- 3Q94 Select Lead Plant for NUMAC PRNM with Option III
- 1Q95 Submit NUMAC PRNM with Option III & 2 out of 4 Trip Logic Generic Topical Report (GE)
- 1Q95 Submit Detect and Suppress Topical Report (BWROG)
- 3Q95 NRC SER of Generic NUMAC PRNM Topical Report
- 3Q95 Fabricate and Test NUMAC PRNM with Option III & 2 out of 4 Trip Logic Prototype (GE)
- 4Q95 NRC SER of BWROG Detect & Suppress Topical Report
- 4Q95 Option III Ready for Installation at Lead Plant

ATTACHMENT 2

PLANT HATCH UNIQUE ACTIVITIES (OPTION III PLUS PRNM UPGRADE)

- 2Q/95 Submit Units 1 & 2 NUMAC PRNM Upgrade Proposed Technical Specification Amendments to the NRC (improved 4 channel APRM with 2 out of 4 logic)
- 3Q/95 NRC SER for PRNM Technical Specification Amendments (prior to Unit 2 Refueling Outage scheduled to start 9/95)
- 3Q/95 Hardware Fabrication & Factory Acceptance Test Complete
- 4Q/95 Install & Test Unit 2 NUMAC PRNM Upgrade with Stability Option III in Alarm Mode (stability trip disabled)
- 2Q/96 Install & Test Unit 1 NUMAC PRNM Upgrade with Stability Option III in Alarm Mode (stability trip disabled)
- 3Q/96 Submit Units 1 & 2 OPRM Proposed Technical Specification Amendments to the NRC
- 1Q/97 NRC SER for Stability Option III Technical Specification Amendments (prior to Unit 2 Refueling Outage scheduled to start 3/97)
- 2Q/97 Activate Unit 2 Stability Option III RPS Trip Function
- 4Q/97 Activate Unit 1 Stability Option III RPS Trip Function