

Public Service
Electric and Gas
Company

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Vice President and Chief Nuclear Officer

SEP 09 1994

NLR-N94140

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

RESPONSE TO GENERIC LETTER 94-02
BWR THERMAL HYDRAULIC INSTABILITIES
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

This letter responds to Generic Letter 94-02 for the Hope Creek Generating Station and is being submitted in accordance with the reporting requirements of the generic letter. Specifically, Reporting Requirement 1 specifies that the NRC be notified of the plans and status with respect to the generic letter's requested actions within 60 days of its date.

Information concerning our actions and plans relative to the requested actions of the generic letter is provided in the attachment to this letter. Specifically, the attachment includes information concerning procedure and training enhancements for preventing or responding to thermal hydraulic instabilities as well as information relative to our plans and schedule for implementing a long term solution.

Reporting Requirement 2 specifies that written correspondence be provided to verify implementation of actions within 30 days of their completion. Appropriate correspondence will be prepared and transmitted to the NRC in accordance with this requirement when both the procedure and training enhancements are completed and when the long term solution is fully implemented.

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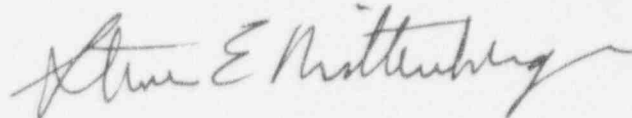
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Should there be any questions or comments with regard to this submittal, please do not hesitate to contact us.

Sincerely,



Attachment
Affidavit

C Mr. T. T. Martin, Administrator - Region I
U. S. Nuclear Regulatory Commission
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King of Prussia, PA 19406

Mr. D. Moran, Licensing Project Manager
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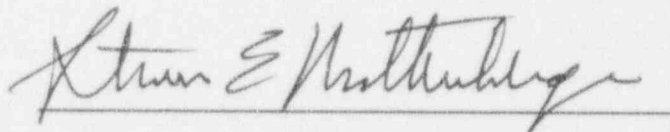
Mr. R. Summers (S09)
USNRC Senior Resident Inspector

Mr. K. Tosch, Manager IV
NJ Department of Environmental Protection
Division of Environmental Quality
Bureau of Nuclear Engineering
CN 415
Trenton, NJ 08625


STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

S. E. Miltenberger, being duly sworn according to law deposes and says:

I am Vice President and Chief Nuclear Officer of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter concerning the Hope Creek Generating Station, are true to the best of my knowledge, information and belief.



Subscribed and Sworn to before me
this 9th day of September, 1994


Notary Public of New Jersey

My Commission expires on _____
KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

ATTACHMENT

INFORMATION IN RESPONSE TO GENERIC LETTER 94-02

RESPONSE TO GENERIC LETTER 94-02
BWR THERMAL HYDRAULIC INSTABILITIES
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
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I. INTRODUCTION

This attachment provides information for the Hope Creek Generating Station in response to Generic Letter 94-02 and satisfies the provisions of Reporting Requirement 1 of the generic letter.

Reporting Requirement 1 of Generic Letter 94-02 specifies that the NRC be notified of the plans and status with respect to the generic letter's requested actions within 60 days of its date. The generic letter contains two requested actions. Information concerning each of the two requested actions is provided below.

II. RESPONSE TO REQUESTED ACTION 1

A. NRC Request

Requested Action 1 states the following:

"All licensees of BWRs, except for Big Rock Point which does not have the capability for operation under variable flow conditions, are requested to review their current procedures and training programs and modify them as appropriate to strengthen the administrative provisions intended to avoid power oscillations or to detect and suppress them if they occur prior to implementation of the long-term solutions. The experience gained at WNP-2 should be a primary guide in this review. In doing this, each licensee of a BWR (except for Big Rock Point) should:

- a. Ensure that procedural requirements exist for initiation of a manual scram under all operating conditions when all recirculation pumps trip (or there are no pumps operating) with the reactor in the RUN mode, 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 following the trip of all recirculation pumps (the procedural manual scram is not necessary after long-term solutions are approved and implemented for individual plants); and

- b. Ensure that factors important to core stability characteristics (e.g., radial and axial peaking, feedwater temperature, and thermal hydraulic compatibility of mixed fuel types) are controlled within appropriate limits consistent with the core design, power/flow exclusion boundaries, and core monitoring capabilities of the reactor in question, and that these factors are controlled through procedures governing changes in reactor power, including startup and shutdown, particularly at low-flow operating conditions. Each licensee should review its procedures and determine if instability can be avoided by these procedures and if the procedures can be carried out using existing instrument information. If it is concluded that a near-term upgrade of core monitoring capability is called for to ease the burden on operators, determine the need to incorporate on-line stability monitoring or monitors for stability sensitive parameters and inform the NRC of the schedule and technical evaluation for such upgrades found to be necessary. (These procedural operation controls will no longer be necessary for licensees which implement fully automatic long-term solutions, such as Options III or IIIa of Reference 2. Licensees should propose for plant-specific review the administrative controls to be retained in conjunction with other long-term solutions.)."

B. PSE&G Response to Requested Action 1

Our response to Requested Action 1 is as follows:

Hope Creek has implemented the interim corrective actions (ICAs) specified in NRC Bulletin 88-07, Supplement 1, and, in addition, has supported the BWROG effort to develop improved guidelines for the ICAs to better address startup and low power maneuvering conditions. A copy of the improved BWR Owners' Group Guidelines for stability interim corrective action was provided to the NRC in Reference 1 (see Section IV below for the list of references). It is our understanding that, based on a review of an advanced copy of these guidelines (Reference 2), the NRC will accept the improved BWROG guidelines as an adequate response to Requested Actions 1.a and 1.b of Generic Letter 94-02.

It should be noted that the BWR Owners' Group Guidelines (Reference 1) are consistent with, but more restrictive than, the ICAs which were 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 Reference 1 guidelines incorporate an expanded instability 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.

Although Hope Creek's current procedures and operator training meet the intent of the requested actions in Generic Letter 94-02, Hope Creek plans to modify its procedures and operator training, where necessary, such that they are consistent with, or more conservative than, the BWROG guidelines in Reference 1. Implementation involves development of changes, comment incorporation (if necessary), document distribution, and training of all licensed operators (both classroom and simulator during the normal operator regualification cycle). These activities will be completed by May 30, 1995. The Reference 1 Controlled Entry Region will be treated as part of the Exit Region and power distribution controls will not be implemented. Hope Creek is not licensed to operate at extended load lines above 108% and will not include the Reference 1 Exit Region above the 108% rod line in the Exit Region.

Because the guidelines are intended for use until replaced by a stability long-term solution, modification of the Hope Creek Technical Specifications for the interim period is not appropriate. The Reference 1 guidelines and resulting plant operating procedure and operator training modifications are intended for use only until the stability long-term solution is implemented. Beyond this, all appropriate procedures and training will be specified by the long term solution implemented at Hope Creek.

III. RESPONSE TO REQUESTED ACTION 2

A. NPC Request

Requested Action 2 states the following:

"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 actions, including design specifications for any hardware modifications or additions to facilitate manual or automatic protective response needed to ensure that the plant is in compliance with General Design Criteria 10 and 12. An acceptable plan could provide for implementing one of the long-term stability solution options proposed by the BWROG and approved by the NRC in Reference 3 or in subsequent documentation. The plan should include a description of the action proposed and a schedule of any submittal requiring plant-specific design review and approval by the NRC and an installation schedule (if applicable). The plan should also address the need for near-term and long-term technical specification modifications. Generic BWROG documents or planned submittal may be referenced in the plan."

B. PSE&G Response to Requested Action 2

In response to the Requested Action 2 of NRC Generic Letter 94-02, Hope Creek's plans for implementing a long-term solution to the reactor coupled neutronic/thermal-hydraulic stability issue are provided below.

The NRC requirement for stability long-term corrective actions to ensure compliance with General Design Criteria 10 and 12 of 10CFR50 was originally presented in NRC Bulletin 88-07, Supplement 1 (December 30, 1988). The Bulletin acknowledged that the NRC was working with the BWR Owners' Group (BWROG) to develop generic approaches to resolve this issue. The resulting BWROG efforts have led to the solution concepts and supporting methodology described in NEDO-31960 and NEDO-31960, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology." NRC acceptance of the BWROG developed solution concepts and supporting methodology is indicated in Reference 3; plans have been formulated for implementing a stability long-term solution.

Based on the technical progress that has been made in the BWROG stability program and the degree of NRC acceptance indicated in Reference 3, plans have been formulated for implementing a stability long-term solution. Hope Creek has elected to proceed with a solution which introduces new plant hardware/software to provide early detection of oscillations and to initiate an appropriate mitigating action. This "Long-Term Solution Stability System" (LTSSS) features the Option III (OPRM) concept description in NEDO-31960 and NEDO-31960, Supplement 1. To complete this activity, Hope Creek is participating with other utilities under a BWROG program and has contracted with ABB Combustion Engineering to develop the hardware/software design and deliver the final product. Recommendations for Technical Specification changes will be provided as part of the program. These will be incorporated at Hope Creek as appropriate. Implementation of the stability long-term solution plan is contingent upon NRC acceptance of the planned BWROG submittal on methodology and the BWROG/ABB Combustion Engineering submittal on hardware and software.

The current milestone schedule for completion of the joint design and licensing activities is provided in Section III.C below. The LTSSS hardware is scheduled to be available in Fall 1995. The plan, as discussed at the July 21, 1994 Option III Owners' meeting with the NRC, is for the first installation of the LTSSS to be in the fourth quarter of 1996. This schedule allows appropriate time for the engineering preparation for system installation. The Owners' Group recommendation is for plants to operate with the new RPS trip function disabled for at least six months to evaluate the system performance and its potential for spurious trip signals and to become familiar with the system operation. The present interim corrective actions (ICAs) will be used during the period when the RPS trip is disabled. During this period, the alarm and trip functions will be monitored. The near term plan is to use the existing Technical Specification without any modification for the interim period operation. Upon successful completion of the evaluation period, the RPS trip function will be enabled and the system declared operational. The present ICAs will be replaced by appropriate operational procedures for long-term operation.

The Hope Creek Technical Specifications will be modified to reflect the installation of LTSSS as a new Reactor Protection System.

Assuming that the joint development and NRC acceptance is completed as scheduled (see Section III.C below), it is PSE&G's objective to have the LITSSS installed at Hope Creek prior to startup from Refueling Outage 7, currently scheduled for the Spring of 1997, and to have it operational following completion of the acceptance testing and expiration of the interim evaluation/familiarization period (at least six months following startup from the outage).

C. Design and Licensing Activities (ABB CE Option III)

2Q/94	Initiated design work (ABB CE)
3Q/94	Met with NRC on hardware/software development process (July 21)
4Q/94	Submittal of Option III hardware/software topical report to NRC (ABB)
1Q/95	Detect and suppress topical report submittal (first time application and reload review)
3Q/95	NRC approval of Option III licensing topical and generic Technical Specification
3Q/95	Start Option III initial plant installation engineering preparation
4Q/95	Completion of system design and development
4Q/96	Outage start for installation of Option III at first plant
RFO 7	Plan to install Option III at Hope Creek

IV. REFERENCES

1. Letter, L. A. England to M. J. Virgilio, "BWR Owners' Group Guidelines for Stability Interim Corrective Action", June 6, 1994
2. Letter, L. A. England to M. J. Virgilio, "BWR Owners' Group Improved Guidelines for Stability Interim Corrective Actions", April 4, 1994
3. Letter, A. Thadani (NRC) to L. A. England (BWROG), "Acceptance for Referencing of Topical Reports NEDO-31960 and NEDO-31960, Supplement 1, 'BWR Owners' Group Long-Term Stability Solutions Licensing Methodology'", dated July 12, 1993.