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NED-84-510

September 26, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC DOCKET 50-366
OPERATING LICENSE NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNIT 2
OPERABILITY CONCERN REGARDING RESIDUAL
HEAT REMOVAL SERVICE WATER SYSTEM PUMPS

Gentlemen:

On September 25, 1984, a discussion regarding the operability of the Residual Heat Removal Service Water System (RHRSW) Pumps of Plant Hatch Unit 2 was held between representatives of Georgia Power Company (GPC) and members of the NRC staffs of Nuclear Reactor Regulation and Region II Office of Inspection and Enforcement. Pursuant to that discussion, GPC herein submits for your review and concurrence a description of the circumstances surrounding our concern and our course of action to resolve that concern.

Recently, as part of the consideration of a possible future modification to up-grade the service life of the Plant Hatch RHRSW Pumps, the pump vendor, Johnston Pump Company, was asked to provide design input. While reviewing the latest revision of the seismic analysis, Johnston Pump Company found that an apparent inconsistency existed between the bolt materials assumed in the seismic analysis and those shown on available documentation of the pump installation. Johnston Pump Company informed our architect-engineer of their findings and questioned what bolt material was installed in the pump columns. Their question raised a concern on the part of our architect-engineer regarding a potential impact on pump operability. If this discrepancy were determined in fact to exist, the bolted pump columns might not be of sufficient strength to remain operable following a postulated seismic event.

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The pump assemblies, as purchased for Plant Hatch Unit 2, were assembled using bolts manufactured of SA-193 Grade B8 material. Subsequently, a design modification was implemented to relocate the pump column seismic support from a location below the water level to one above the high water level to facilitate repairs and normal service removal. At the time of this support relocation, a seismic reevaluation by Johnston Pump Company was requested. This reevaluation was performed with the assumption that SA-354 grade DB bolts would be used in the modified pump column. This change in bolt material was required due to an increase in the calculated bolt stresses predicted for an Operating Basis Earthquake (OBE) seismic event to stresses greater than those allowed by ASME Code Section III, 1971 for SA-193 Grade B8 bolts. The bolt stresses during normal pump operation (maximum normal operating stress is approximately 11,500 psi) are well below the code allowable stress of 15,000 psi as specified by ASME Section III, 1971, for the SA-193 Grade B8 bolts. It should be noted that the ASME codes by which the acceptability of the loading of the bolts is determined have an inherent margin of safety. Documentation found to date of the as-modified pumps does not reflect that the bolting material assumed in the seismic reevaluation was used - and still may not after the review is complete. Hence, GPC is concerned that a deficiency potentially exists which could adversely affect the operability of the RHRSW pumps.

Since a final determination of the actual strength properties of the installed bolts has not been ascertained by either the available documentation or materials examination, GPC has undertaken what is believed to be the most conservative approach in resolving the uncertainty about the bolts. To this end, three efforts are being pursued concurrently. First, in order to determine with certainty what bolt material was installed in the flanges, a sample of the installed bolts has been obtained and will be analyzed by an independent laboratory in Atlanta to determine the material of manufacture and the associated strength characteristics. Until this analysis is made, a final determination of the status of the RHRSW pumps cannot be made with certainty. The results of this material analysis are expected to be available by September 28, 1984.

Second, a reanalysis of the seismic loadings on the bolts in question is underway using improved seismic analysis techniques and input assumptions to determine if the original bolts of SA-193 Grade B8, should they still be installed, might be acceptable for pump support after the postulated OBE.

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The reanalysis of the seismic loading, if it is still required in light of the third aspect of the program, will be available by September 28, 1984.

A third effort, which we feel to be very conservative, is that GPC is replacing the questionable bolts in the RHRSW Pumps without waiting for the results of the above two efforts. Sufficient bolts of the SA-354 grade DB material assumed in the Johnston Pump Company seismic analysis are available at the plant site and are presently being installed. First priority in the bolt replacement effort is the replacement of the questionable bolts in one pump in each of the RHRSW subsystem loops to remove any doubt concerning the short term operability of the RHRSW system in the minimum possible time. This work is being performed on an around-the-clock basis with as many personnel assigned as can reasonably be expected to work within the area of the pumps. Bolt replacement is expected to be accomplished on one pump in each loop by 2400 Eastern Daylight Savings Time (EDST) on September 27, 1984. Because the work is of a sequential nature, it is anticipated that one pump will be completed approximately 24 hours prior to the stated time on September 27th. The remaining two RHRSW pumps will have the questionable bolts replaced as soon as possible, but no later than 1800 EDST on October 2, 1984.

It is GPC's position that because of the period of time before these three efforts can be accomplished, additional actions are necessary even though the original bolts may prove to be acceptable. The Plant Deputy General Manager declared the RHRSW pumps inoperable upon the recommendation of the Plant Hatch Plant Review Board as a conservative approach to plant operations. The action statement of Technical Specification 3.7.1.1(4) has not been implemented based upon the subject telephone conversation with the NRC staff and a concern for the optimization of plant safety discussed below.

Because of the nature of this particular situation, the safest and most conservative action is to maintain the unit in its present operational condition. By so maintaining the unit, the RHRSW pumps are not required to operate. If the plant were to undertake a shutdown, the risks of a possible abnormal plant transient would be increased. In addition, going to a shutdown condition requires the RHRSW pumps to operate. The analysis done by our engineering support indicates that, in the event of an OBE, the stresses on the pump column will be greater for an operating pump than for a non-operating pump. This is due to the fact that the stresses on the pump column are additive and, should the unlikely OBE occur (an annual risk of

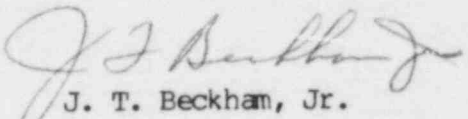
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exceeding an 0.08g OBE acceleration is estimated to be 4.5×10^{-4} - reference S.T. Algemissen and D. M. Perkins Probabilistic Estimate of Maximum Acceleration in Rock in the Contiguous U.S., USGS 76-416, 1976), the total loading on the bolts is decreased by an amount corresponding to that portion of the ASME code loading which is derived from the pressure component due to pump operation. Thus a lower stress will be realized in the event of an OBE with the plant in operation.

In order to further minimize the possibility of any plant abnormal transients which would require the use of the pumps, action has been taken to minimize power changes and testing during the period of time until the bolts on at least two RHRSW pumps have been replaced and the pumps placed back in service. Further, the replacement of the bolts can be accomplished more efficiently in an environment where all pumps are stopped. Thus, while the program to resolve the bolt material question is underway, it is GPC's intention to continue operation on Plant Hatch Unit 2 and, thereby, maintain the optimum condition of safety under the existing circumstances.

The Plant Hatch Plant Review Board and the corporate Safety Review Board have reviewed the circumstances reported herein and concur with the conclusions and actions described. If you have any questions regarding this letter, please call my office.

Yours very truly,


J. T. Beckham, Jr.

xc: H. C. Nix, Jr.
J. P. O'Reilly (NRC- Region II)
Senior Resident Inspector