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SOUTHERN COMPANY
Energy to Serve Your World℠

May 21, 2003

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant
Measurement Uncertainty Recapture Power Uprate (MURPU)
Request for Additional Information (RAI) Response

Ladies and Gentlemen:

By letter dated December 19, 2002, Southern Nuclear Operating Company (SNC) submitted to NRC a Technical Specifications amendment request for the Edwin I. Hatch Nuclear Plant Units 1 and 2. The proposed amendment increases the authorized maximum power level for both units from the current limit of 2763 CMWt to 2804 CMWt.

The NRC/NRR Hatch Project Manager, via electronic communication, forwarded to SNC several requests for additional information containing staff review requests related to SNC's December 19, 2002 submittal.

The Enclosure provides documentation of the NRC's requests followed by SNC's responses.

A001

Mr. H. L. Sumner, Jr. states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

H. L. Sumner, Jr.

Sworn to and subscribed before me this 21st day of May, 2003.

Notary Public

My commission expires: 11/10/06

HLS/twl/daj

Enclosure: Measurement Uncertainty Recapture Power Uprate (MURPU) Request for Additional Information (RAI) Response

cc: Southern Nuclear Operating Company
Mr. J. D. Woodard, Executive Vice President
Mr. G. R. Frederick, General Manager – Plant Hatch
Document Services RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. S. D. Bloom, NRR Project Manager – Hatch
Mr. N. P. Garrett, Acting Senior Resident Inspector – Hatch

State of Georgia
Mr. L. C. Barrett, Commissioner – Department of Natural Resources

Edwin I Hatch Nuclear Plant
Measurement Uncertainty Recapture Power Uprate (MURPU)
Request for Additional Information (RAI) Response

Enclosure

NRC RAI EEIB-1

Is the feedwater temperature uncertainty (TU_{FWT}) reported in section 4.2.1.4 of Attachment 1 to Enclosure 7 of the licensee's submittal (sheet 9 of 89) based on the use of the CORRTEMP instrumentation? If yes, the licensee should address the actions to be taken if the CORRTEMP system becomes inoperable. In this discussion, the licensee should justify the reactor power level to be maintained while the CORRTEMP system is inoperable.

SNC RAI EEIB-1 Response

The feedwater temperature uncertainty (TU_{FWT}) reported in section 4.2.1.2 of Attachment 1 to Enclosure 7 of the subject submittal is not based on the use of the CORRTEMP™ instrumentation. TU_{FWT} is based on existing plant temperature instrumentation.

The CORRTEMP™ instrumentation for Hatch is considered an integral part of the CROSSFLOW™ system. Power level for the Hatch units will not be varied based on partial system operation. If the CORRTEMP™ device is out of service, the CROSSFLOW™ system will be considered out of service.

The mass flow uncertainty for the UFM that is assumed in the December 19, 2002 licensing request accounts for the temperature input from the CORRTEMP™ devise [Ref. Tables E7-2 and E7-5, "UFM Flow (% Actual Flow)"]. Therefore, as requested in the licensing submittal, if the CROSSFLOW system (UFM with UTM) is out of service, the respective unit will revert back to using only the existing plant instrumentation and power will be reduced 1-percent.

NRC RAI EEIB-2

The licensee stated that each Crossflow™ measurement device consists of eight non-intrusive flow transducers (four primary/four redundant) mounted in a saddle-type support frame. CENPD-397-P-A describes a Crossflow™ measurement system consisting of four non-intrusive flow transducers. Describe the differences in design between the Crossflow™ system approved by the NRC in CENPD-397-P-A and the system to be installed at Hatch.

SNC RAI EEIB-2 Response

The Crossflow measurement devices installed at Plant Hatch are the CROSSFLOW^{XT} devices which are an enhanced version of the CROSSFLOW™ ultrasonic flow measurement system described in CENPD-397-P-A, Rev. 01. This enhanced system is described in Westinghouse letter LTR-NRC-02-03, dated January 18, 2002 to the NRC. This system provides increased operational reliability along with improved flow measurement accuracy without significant changes to the base hardware package described in CENPD-397-P-A, Rev. 01. The enhancements are based on technologies and well established statistical methodologies that have been previously reviewed and

approved by the NRC. Therefore; the devices installed at Hatch are consistent with the requirements of the NRC SER for the CROSSFLOW™ measurements devices (Ref Letter, S. A. Richards (NRC) to I. C. Rickard (ABB-CE), "Acceptance for Referencing of CENPD-397-P, Revision -01-P, 'Improved Flow Measurement Accuracy Using CROSSFLOW Ultrasonic Flow Measurement Technology' (TAC No. MA6452)", March 20, 2000.

NRC RAI EEIB-3

On page E7-5 of Enclosure 7, the licensee stated that "both Unit 1 and Unit 2 calibrations for the UFMs will be performed with a mockup laboratory installation, modeling the actual to-be-installed plant configuration." The licensee concluded, the laboratory setup inherently models the plant configuration, and thus the flow profile and meter factors are representative of the plant-specific installation. The licensee concluded that no additional justification is required to show that the meter installation is either independent of the plant-specific flow profile for the stated accuracy, or that the installation can be shown to be equivalent to known calibration and plant configurations for the specific installation, including the propagation of flow profile effects at higher Reynolds numbers. Provide a justification for using modeling to calibrate the Crossflow™ flowmeters, and describe the process by which the calibration data are extrapolated to plant conditions. In this discussion, describe the test facility, test procedure, and the scaling that will be used to calibrate the UFMs.

SNC RAI EEIB-3 Response

A hydraulic model was created to help calibrate Unit 1 but not Unit 2. Enclosure 7 of the December 19, 2002 licensing submittal assumed the Unit 2 installation (installed during the spring 2003 refueling outage) would be similar to the Unit 1 installation. However, the final Unit 2 installation and data for the Unit 2 system confirmed that the flow was developed at the location of the meters.

For Unit 1, due to a non standard piping arrangement with a limited run of straight pipe, it was necessary to perform a laboratory calibration for meters. The laboratory calibration determined the "Velocity Profile Correction Factor" as described in Section 5.6.1 of CENPD-397-P-A, Rev. 01.

The calibrations were performed at the National Research Center of Canada in Ottawa where all flow measurements were determined using the weigh tank method and standards traceable to NIST. The test procedure called for two configuration tests, the first being a baseline test, where meters were placed along the model piping downstream of a simple 90-degree elbow. This represented a baseline configuration, where it is known that at 15 pipe diameters downstream of the elbow, the correction factor is only a function of the Reynolds number under field conditions as reported in the Topical Report. The second configuration test called for the 90-degree elbow to be placed with the plant 90/45-degree elbow combination and the flow measurements repeated. The difference between the plant configuration and the baseline configuration represented the Velocity Profile Correction Factor to be applied for the plant piping configuration.