



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

September 15, 1998

Mr. L. Joseph Callan
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington DC 20555-0001

Dear Mr. Callan:

SUBJECT: APPLICATION FOR POWER LEVEL INCREASE FOR EDWIN I. HATCH
NUCLEAR POWER PLANT UNITS 1 AND 2

During the 455th meeting of the Advisory Committee on Reactor Safeguards, September 2-4, 1998, we reviewed the application by the Southern Nuclear Operating Company, Inc. (SNC) for a power level increase for the Edwin I. Hatch Nuclear Power Plant Units 1 and 2. Our Subcommittee on Thermal-Hydraulic Phenomena discussed this matter on August 27, 1998. During these meetings, we had the benefit of discussions with representatives of General Electric Nuclear Energy (GENE), SNC, and the NRC staff. We also had the benefit of the documents referenced.

The SNC has requested an eight percent power level increase for each unit of the Hatch plant to permit power operation up to 2763 MWt. The current rated power for each unit is 2558 MWt (a five percent power level increase had been approved earlier under the original GENE generic power uprate program). The current request for an additional eight percent power level increase utilized the GENE generic guidelines [Licensing Topical Report (LTR) NEDC-32424P] and generic evaluations [LTR NEDC-32523P] developed for the "Extended Power Uprate" program. This generic program is intended to ensure that the extended power uprate application will either meet all the regulatory requirements or have only justifiable exceptions. In its application, the SNC took minor exception in the area of startup test recommendations. In our July 24, 1998 report, we concurred with the GENE generic guidelines and evaluations as qualified by the staff's safety evaluation reports.

The power increase for the Hatch units is accomplished by flattening the radial power profile while holding the peak bundle power constant. The core exit steam quality is increased. Additional steam flow requires small increases in feedwater flow and reactor recirculation pump speed. The additional flow is well within the capacity of the separator and dryer system. Significant increase in the reactor vessel pressure is avoided by modifying the high-pressure stage of the steam turbines. The reactor core power/flow map is expanded along the current "load line limit" so that the maximum core flow limit does not exceed the pre-uprate value. A detect-and-suppress system is used by SNC to deal with boiling water reactor instability

concerns. This system utilizes closely spaced individual local power range monitor neutron flux detectors, combined into cells, to detect any local or global instability (Option III of Supplement 1 to NRC Bulletin 88-07 and NRC Generic Letter 94-02). Other changes include modification of some balance-of-plant systems; recalibration of plant instrumentation, including changes in set points; and appropriate modification of plant procedures.

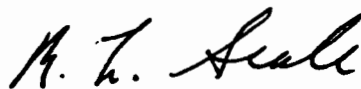
The NRC provides criteria in 10 CFR 50.92(c) for determining whether a significant hazards consideration exists in any proposed license amendment. On the basis of its evaluation, the staff concluded that the requested power level increase does not involve a significant hazards consideration. The staff found the analyses, methods, and results submitted by SNC to be acceptable.

The SNC presented substantial probabilistic risk analyses and uncertainty evaluations to support a risk-informed decision process. These analyses included reviews of initiating event frequencies, equipment failure rates, operator errors, and success criteria. Qualitative arguments were used to establish that the contributions of fire, external events, and events under shutdown conditions to CDF are likely to be acceptably small. The effects of power uprate on the expected value of the large, early-release frequency were shown to be small.

The results of the analyses showed that the most risk-significant effect of the power uprate was a change in the failure probability associated with the operator action to depressurize when inadequate high-pressure injection exists. The resulting change in core damage frequencies (Δ CDF) for Units 1 and 2 is less than 10^{-6} per year at a base CDF (for internal events) of about 2×10^{-5} per year.

We concur with the conclusions of the staff that the requested license amendment meets all regulatory requirements for adequate protection and does not pose undue risk to the health and safety of the public. Therefore, we agree with the staff's recommendation for approval of the requested eight percent power level increase for the Edwin I. Hatch Nuclear Plant Units 1 and 2.

Sincerely,



R. L. Seale
Chairman

References:

1. Memorandum dated August 14, 1998, from H. N. Berkow, Office of Nuclear Reactor Regulation, to J. T. Larkins, ACRS, transmitting draft Safety Evaluation Supporting Southern Nuclear Operating Company, Inc., Application for Edwin I. Hatch Power Uprate.
2. Letter dated August 8, 1997, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Edwin I. Hatch Nuclear Plant Request for License Amendment, Extended Power Uprate Operation (contains proprietary information).

3. Letter dated March 9, 1998, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Response to Request for Additional Information on Extended Power Uprate License Amendment Request.
4. Letter dated May 6, 1998, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Response to Request for Additional Information on Extended Power Uprate License Amendment Request.
5. Letter dated July 6, 1998, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Response to Request for Additional Information on Extended Power Uprate License Amendment Request (contains proprietary information).
6. Letter dated July 24, 1998, from R. L. Seale, Chairman, ACRS, to L. Joseph Callan, Executive Director for Operations, NRC, Subject: General Electric Nuclear Energy Extended Power Uprate Program and Monticello Nuclear Generating Plant Power Level Increase Request.
7. Letter dated July 31, 1998, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Response to Request for Additional Information on Extended Power Uprate License Amendment.
8. Letter dated April 17, 1997, from H. L. Sumner Jr., Southern Nuclear Operating Company, Inc., to U.S. Nuclear Regulatory Commission, transmitting Revised Post-LOCA Doses.
9. Letter dated March 22, 1996, from W. Marquino, GE Nuclear Energy, to U.S. Nuclear Regulatory Commission, transmitting Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate, NEDC-32523P, March 1996, and NEDC-32523P Supplement 1, Volumes I & II, June 1996 (Proprietary).
10. GE Nuclear Energy Report NEDC-32424P, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," February 1995 (Proprietary).
11. Letter dated February 8, 1996, from D. Crutchfield, NRC, to G. Sozzi, General Electric Nuclear Energy, transmitting Staff Position Concerning General Electric Boiling Water Reactor Extended Power Uprate Program.
12. Memorandum dated May 18, 1998, from E. G. Adensam, Office of Nuclear Reactor Regulation, to John T. Larkins, ACRS, transmitting Staff Position Concerning GE Licensing Topical Report, NEDC-32523P on Generic Evaluation of Boiling Water Reactor Extended Power Uprate.
13. U. S. Nuclear Regulatory Commission Bulletin 88-07, Supplement 1: Power Oscillations in Boiling Water Reactors (BWRs), dated December 30, 1988.
14. U.S. Nuclear Regulatory Commission Generic Letter 94-02: Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors, dated July 11, 1994.

