

Mark J. Ajluni, P.E.
Nuclear Licensing Director

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.7673
Fax 205.992.7885



August 16, 2011

Docket Nos.: 50-366

NL-11-1716

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

Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative HNP-ISI-ALT-11
In Accordance With 10 CFR 50.55a(a)(3)(i)
Response to NRC Request for Additional Information

Ladies and Gentlemen:

By letter dated May 17, 2011, (ADAMS Accession No. ML111380211) Southern Nuclear Operating Company (SNC) submitted a request for proposed alternative HNP-ISI-ALT-11, for the ISI Program, in accordance with 10 CFR 50.55a(a)(3)(i). Subsequently, by letter dated July 28, 2011, (ADAMS Accession No. ML11206A001) the NRC submitted a Request for Additional Information (RAI) to enable completion of the review. The SNC response to the RAIs are provided in the Enclosure.

This letter contains no NRC commitments. If you have any questions, please contact Jack Stringfellow at (205) 992-7037.

Respectfully submitted,

A handwritten signature in black ink that reads "Mark J. Ajluni".

M. J. Ajluni
Nuclear Licensing Director

MJA/GAL/lac

Enclosure:

Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative
HNP-ISI- ALT-11, Response to NRC Request for Additional
Information

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. J. T. Gasser, Executive Vice President
Mr. D. R. Madison, Vice President – Hatch
Ms. P. M. Marino, Vice President – Engineering
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Regional Administrator
Mr. P. G. Boyle, NRR Project Manager
Mr. E. D. Morris, Senior Resident Inspector – Hatch

**Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative HNP-ISI-ALT-11,
in Accordance With 10 CFR 50.55a(a)(3)(i) Response to NRC
Request for Additional Information**

Enclosure

**Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative HNP-ISI-ALT-11,
Response to NRC Request for Additional Information**

**Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative HNP-ISI-ALT-11,
Response to NRC Request for Additional Information**

1. NRC RAI

Confirm that the neutron fluence calculations used in the application conform to the requirements set forth in the NRC safety evaluation pertaining to the Radiation Analysis Modeling Application (RAMA) code, dated May 13, 2005. Specifically confirm that:

The best-estimate [reactor pressure vessel] neutron fluence prediction is determined using the RAMA transport code, detailed plant-specific geometry, core operating history, and the BUGLE-96 nuclear data library with a minimum of a P_3 Legendre polynomial approximation in the iron inelastic scattering.

If this is not the case, detail how the neutron fluence calculations used in the application are acceptable.

SNC RESPONSE

As documented in TransWare Enterprises report, SNC-FLU-002-R-001, Revision 0, the Hatch-2 fluence evaluation was completed using the RAMA transport code, detailed plant-specific geometry, core operating history, and the BUGLE-96 nuclear data library. The RAMA transport calculation uses information from the RAMA nuclear data library to determine the scope of the flux calculation. This information includes the Legendre expansion of the scattering cross sections that is used in the treatment of anisotropy of the problem. By default, the RAMA transport calculation uses the maximum order of expansion that is available for each nuclide in the RAMA nuclear data library (i.e., through P_5 scattering for actinide and zirconium nuclides and through P_7 scattering for all other nuclides in the model).

**Edwin I. Hatch Nuclear Plant – Unit 2 Proposed Alternative HNP-ISI-ALT-11,
Response to NRC Request for Additional Information**

2. NRC RAI

The mean nil-ductility transition reference temperature (RT_{NDT}) values reported in Tables 1 and 2 of the submittal are based on delta RT_{NDT} values from "SIA ART Calculation[s]." Explain in detail how these calculations are, or are not, consistent with the guidance provided in Regulatory Guide (RG) 1.99, Rev. 2, "Radiation Embrittlement of Reactor Vessel Materials." If they are not consistent with the guidance in RG 1.99, Rev. 2, please indicate whether these proposed values (i.e., the delta RT_{NDT} values used in the calculation of the mean RT_{NDT} values in this submittal) have been previously reviewed and accepted by the staff.

SNC RESPONSE

As documented in SIA report, HTCH-21Q-302R1, the updated fluence values were used to determine the RT_{NDT} shift and projected Adjusted Reference Temperature (ART) values for the Hatch-2 reactor pressure vessel materials. The calculations performed by SIA were performed using the equations and values provided in Regulatory Guide 1.99, Revision 2. Adjusted reference temperatures were calculated for each of the Reactor Pressure Vessel (RPV) welds and plates in locations projected to reach or exceed a fluence of 1×10^{17} n/cm² (> 1.0 MeV). The results were then tabulated in a series of Excel spreadsheets with ART calculations performed for 19.5, 36, 40, 44, 48, and 50.1 EFPY. The TransWare report provided outputs of fluence values at 19.5 (end of Cycle 18) and 50.1 EFPY (Cycle 18 extrapolated to end of extended period of operation). Fluence values were determined for selected intermediate Effective Full Power Years (EFPY) by use of linear interpolation. Material properties used for these calculations including chemistry values, chemistry factors and initial reference temperatures, were compared and found to agree with the values provided for the Hatch-2 RPV from the U. S. Nuclear Regulatory Commission, "Reactor Vessel Integrity Database Version 2.0.1," dated September 7, 2000.