UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 27, 2008

Mr. Dennis R. Madison
Vice President - Hatch
Edwin I. Hatch Nuclear Plant
11028 Hatch Parkway North
Baxley, GA 31513

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNIT NO 2, ISSUANCE OF ENVIRONMENTAL ASSESSMENT RE: EXEMPTION REQUEST RELATED TO THE USE OF ZIRON FUEL CLADDING (TAC NO. MD8152)

Dear Mr. Madison:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption dated March 21, 2008, as supplemented May 2, August 8, and September 22, 2008. The proposed exemption would allow the use of ZIRON fuel cladding in a small number of lead test assemblies.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Robert Martin

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-366

Enclosure:
Environmental Assessment

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NO. 50-366

OPERATING LICENSE NO. NPF-5

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Section 46, and Appendix K to Part 50, for Facility Operating License No. NPF-5, issued to Southern Nuclear Operating Company (the licensee), for operation of the Edwin I. Hatch Nuclear Plant, Unit 2 located in Appling County, Georgia. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would allow the use of Ziron fuel cladding. The proposed action is in accordance with the licensee's application dated March 21, 2008, as supplemented May 2, August 8, and September 22, 2008.

The Need for the Proposed Action:

The proposed action would allow a small number of lead test assemblies (LTAs) that will include some fuel rods manufactured with a cladding material, called GNF-Ziron, which is similar in composition to Zircaloy-2, but contains a slightly higher iron content than specified in ASTM B350. Irradiation of LTAs with GNF-Ziron fuel rods will enable SNC to acquire in-reactor operating experience with this material. Pursuant to 10 CFR 50.12, "Specific Exemptions," the licensee has requested an exemption to 10 CFR 50.46, "acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," that requires, among other items, that "each boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding, must be provided with an emergency core cooling system (ECCS) that must be designed so that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section." Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," requires, among other items, that the rate of energy release, hydrogen generation, and cladding oxidation from the metal/water reaction shall be calculated using the Baker-Just equation. The regulations at 10 CFR 50.46 and 10 CFR Part 50, Appendix K, make no provisions for use of fuel rods clad in a material other than zircaloy or ZIRLO. The proposed action would allow the licensee to irradiate a small number of LTAs using fuel rods clad with Ziron alloy in Hatch, Unit 2. Since the material specifications of the Ziron alloy differ from the specification for zircaloy or ZIRLO, a plant-specific exemption is required to support the use of the eight assemblies.

Environmental Impacts of the Proposed Action:

The NRC has completed its safety evaluation of the proposed action and concludes that application of 10 CFR 50.46, and Appendix K to 10 CFR 50, is not necessary for the licensee to achieve its underlying purposes.

The details of the NRC staff safety evaluation will be provided in the exemption that will be issued as part of the letter to the licensee approving the exemption to the regulation.

The staff has concluded that such a change would not adversely affect plant safety, and would have no adverse effect on the probability of any accident. For accidents that involve damage or melting of the fuel in the reactor core, the fuel rod integrity of GNF-Ziron cladded fuel has been shown to be similar to zircaloy cladded fuel; therefore, the probability of an accident will not be affected. For accidents in which the core remains intact, the use of GNF-Ziron cladding will not have a significant effect on the mix of fission products that could be released in the event of a serious accident; thus, the previously analyzed accident dose consequences remain bounding. Regulatory limits on radiological effluent releases are independent of the type of fuel cladding used. The requirements of 10 CFR 50.36a, Appendix I to 10 CFR Part 50, and 40 CFR Part 190, as well as the plant's Technical Specifications ensure that the release of radioactive gaseous, liquid, and solid waste to unrestricted areas are kept to "as low as reasonably achievable" (ALARA) levels. The licensee's radioactive waste processing system will collect, control, process to reduce the amount of radioactivity, and discharge the waste in accordance with regulatory limits. Therefore, the staff concluded that during routine operations, there will be no significant increase of radiological effluents released into the environment as a result of the proposed exemption request. No significant

increase in the allowable individual occupational radiation exposure will occur. The impact to workers is not expected to change because radiation exposure will be controlled in accordance with the licensee's radiation protection program, the ALARA program, in-plant shielding, the use of temporary shielding, and engineering controls. The use of GNF-Ziron fuel rods will not change the potential environmental impacts of incident-free transportation of spent nuclear fuel provided the shipping casks are maintained and transported within the Department of Transportation and NRC regulations. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action. Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resources than those previously considered in NUREG-1437, Supplement 4, "Generic Environmental Impact

Statement for License Renewal of Nuclear Plants," Supplement 4, Regarding the Edwin I. Hatch Nuclear Plant, Units 1 and 2," dated May 31, 2001.

Agencies and Persons Consulted:

In accordance with its stated policy, on September 18, 2008, the NRC staff consulted with the Georgia State official, Mr. Jim Hardeman, of the Department of Natural Resources, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letters dated March 21, 2008, as supplemented May 2, August 8, and September 22, 2008. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 27th day of October, 2008.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert Martin

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
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