September 13, 2005

Mr. D. E. Grissette
Vice President
Southern Nuclear Operating Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING STATION, UNITS 1 AND 2 - RELAXATION OF REQUIREMENTS ASSOCIATED WITH FIRST REVISED ORDER (EA-03-009) DATED FEBRUARY 20, 2004, RELAXATION REQUEST, EXAMINATION COVERAGE FOR REACTOR PRESSURE VESSEL HEAD (TAC NOS. MC7019 AND MC7020)

Dear Mr. Grissette:

By letter dated March 8, 2004, and supplemented by letter dated July 1, 2005, Southern Nuclear Operating Company (SNC) requested relaxation from certain requirements of the First Revised Order EA-03-009 (Order), dated February 20, 2004.

SNC requested relaxation from the Order because visual examinations that are required by the Order are limited by inaccessible areas of the reactor pressure vessel head (RPVH) for Vogtle Electric Generating Plant (VEGP), Units 1 and 2.

The NRC staff has reviewed and evaluated the information provided by SNC in support of this request and concludes that SNC's proposed alternative examination of the RPVH provides reasonable assurance of the structural integrity of the RPVH. Further inspection of the RPVH in accordance with Section IV.C.(5)(a) of the Order would result in hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to Section IV. F. of Order EA-03-009, the NRC staff authorizes the proposed alternative inspection for the RPVH at VEGP, Units 1 and 2, for the time period for which the Order is in effect, including the inspections performed during the previous VEGP, Units 1 and 2 refueling outages in fall 2003 and spring 2004, respectively.

D. Grissette

The NRC staff's review is provided in the enclosed Safety Evaluation. If you have any questions, please contact Christopher Gratton at (301) 415-1055.

Sincerely,

/**RA**/

Edwin M. Hackett, Director Project Directorate II Division of Licensing Project Management Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosure: As stated

cc w/encl: See next page

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Vogtle Electric Generating Plant, Units 1 & 2

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FIRST REVISED NRC ORDER (EA-03-009) RELAXATION REQUEST

ALTERNATE EXAMINATION COVERAGE

FOR REACTOR PRESSURE VESSEL HEAD

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

The First Revised Nuclear Regulatory Commission (NRC) Order EA-03-009 (Order), issued on February 20, 2004, requires specific examinations of the reactor pressure vessel head (RPVH) and vessel head penetration (VHP) nozzles of all pressurized water reactor plants. Section IV, paragraph F, of the Order states that requests for relaxation of the First Revised Order associated with specific penetration nozzles will be evaluated by the NRC staff using the procedure for evaluating proposed alternatives to the American Society of Mechanical Engineers Code in accordance with 10 CFR 50.55a(a)(3). Section IV, paragraph F, of the Order states that a request for relaxation maybe granted upon demonstration by the licensee of good cause.

For Vogtle Electric Generating Plant (VEGP), Units 1 and 2, and similar plants determined to have a low susceptibility to primary water stress corrosion cracking in accordance with Section IV.A and IV.B of the Order, the following inspection is required to be performed in accordance with Section IV paragraph C(3) and paragraph C(5)(a) of the First Revised NRC Order:

- IV.C(3) For those plants in the Low category, RPVH and head penetration nozzle inspections shall be performed as follows. An inspection meeting the requirements of paragraph IV.C(5)(a) must be completed at least every third refueling outage or every 5 years whichever occurs first. If an inspection meeting the requirements of paragraph IV.C(5)(a) was not performed during the last refueling outage prior to February 11, 2003, the licensee must complete an inspection meeting the requirements of paragraph IV.C(5)(a) within the first 2 refueling outages after February 11, 2003.
- IV.C(5)(a) Bare metal visual examination of 100 percent of the RPVH surface (including 360 degrees around each RPVH penetration nozzle). For RPVHs with the surface obscured by support structure interferences which are located at RPVH

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elevations downslope from the outermost RPVH penetration, a bare metal visual inspection of no less than 95 percent of the RPVH surface may be performed provided that the examination shall include those areas of the RPVH upslope and downslope from the support structure interference to identify any evidence of boron or corrosive product. Should any evidence of boron or corrosive product be identified, the licensee shall examine the RPVH surface under the support structure to ensure that the RPVH is not degraded.

By letter dated March 8, 2004, and supplemented by letter dated July 1, 2005, Southern Nuclear Operating Company (SNC), the licensee, requested relaxation to implement an alternative to the requirements of Section IV, paragraph C(5)(a) of the First Revised Order for RPVH inspections at VEGP, Units 1 and 2.

2.0 FIRST REVISED NRC ORDER EA-03-009 RELAXATION REQUEST FOR EXAMINATION COVERAGE FOR REACTOR PRESSURE VESSEL HEAD

2.1 First Revised Order Requirements for Which Relaxation is Requested

Section IV.C(5)(a) of the Order, that is detailed in Part 1.0 of this Safety Evaluation, requires in part that the inspections be performed in accordance with Section IV.C(3) for low susceptibility plants similar to VEGP, Units 1 and 2.

The licensee has requested relaxation from Section IV.C(5)(a) of the Order. The specific relaxation requested is identified below.

2.2 Licensee's Proposed Alternative

SNC seeks relaxation from the Order because visual examinations that are required by the Order are limited by inaccessible areas of the RPVH for VEGP, Units 1 and 2.

2.3 Licensee's Basis for Proposed Alternative

It is the licensee's position that compliance with the requirement for 100 percent visual examination coverage is unnecessary in that inaccessibility of a small percentage of the head surface due to the reflective metal insulation and shroud does not preclude performance of an effective bare metal visual examination of the RPVH. Improving access to this area for visual examination would require major disassembly of the reflective metal insulation and shroud causing a substantial increase in radiation dose. This increase in radiation dose would not be offset by an increase in quality or safety because:

- the RPVH penetration nozzles are not located in or adjacent to the inaccessible area, so a 360 degree visual examination around each RPVH penetration nozzle is unaffected by this limitation, and
- the RPVH surface immediately upslope and downslope of the inaccessible area will be examined for evidence of boric acid leakage under the reflective metal insulation or shroud support structure.

In a letter dated July 1, 2005, in response to NRC staff questions, the licensee provided additional basis for the relaxation request. The licensee estimated that the area of missed coverage was approximately 150 square inches of 19,388 square inches required to be inspected by the Order. The licensee reported that removing the insulation package to gain access to this full area would require at minimum an additional 5 rem for each unit in radiological dose exposure.

The licensee stated that during the VEGP, Unit 1 fall 2003 refueling outage and the VEGP, Unit 2 spring 2004 refueling outage, a remote examination was performed on each RPVH. While performing these examinations, the licensee included those areas of the RPVH upslope and downslope from the insulation interference to identify any evidence of boron or corrosion residue. Further a modification to the insulation was performed prior to the examination in order to make accessible 360 degrees around each RPVH penetration nozzle. The total radiological dose received during the modification to the insulation was 1.2 rem on VEGP, Unit 1 and 1.4 rem on VEGP, Unit 2. Both examinations did not identify penetration nozzle leakage or RPV upper head wastage.

2.4 Evaluation

The NRC staff's review of this request was based on paragraph F of Section IV of the First Revised Order, which states:

Project Directors of higher management positions in the Division of Licensing Management of the Office of Nuclear Reactor Regulation may, in writing, relax or recind any of the above conditions upon demonstration by the Licensee of good cause.

Within the context of the licensee's proposed alternative examination of the RPVH, the licensee has demonstrated the hardship that would result from implementing the full examination required by the Order. In the previous inspections for VEGP, Units 1 and 2, fall 2003 and spring 2004 respectfully, the licensee modified the insulation packages of each unit to visually inspect 100 percent of the important RPVH inspection area around each RPVH penetration nozzle. An additional minimum radiological dose of 10 rem to inspect less than 1 percent of the head surface in an area in which leakage is not expected to initiate is a significant hardship. The licensee's actions to inspect upslope and downslope of the obstruction is consistent with the intent of the Order to verify the integrity of these areas of the RPVH.

Based upon the information above, the NRC staff finds that the licensee has demonstrated good cause for the relaxation and that the proposed alternative examination is acceptable as it provides reasonable assurance of the structural integrity of the RPVH, VHP nozzles and welds. Further inspections to comply with the Order requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

3.0 CONCLUSION

The NRC staff concludes that the licensee's proposed alternative examination of the RPVH for VEGP, Units 1 and 2 provides reasonable assurance of the structural integrity of the RPVH. Further inspection of the RPVH in accordance with Section IV, paragraph C(5)(a), of the Order would result in hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to Section IV, paragraph F, of the First Revised NRC Order EA-03-009 dated February 20, 2004, the NRC staff authorizes the proposed alternative inspection for the RPVH at VEGP, Units 1 and 2, for the time period for which the Order is in effect, including the inspections performed during the previous VEGP, Units 1 and 2 refueling outages in fall 2003 and spring 2004, respectively.

Principal Contributor: JCollins, EMCB

Date: September 13, 2005