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October 28, 1998

LCV-1124-C

Docket No.: 50-424

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

Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
REVISION OF FIRST TEN-YEAR INSERVICE
INSPECTION PROGRAM REQUEST FOR RELIEF

In accordance with the conference call of October 14, 1998, with NRC staff personnel and its consultant, INEEL Research Center, enclosed please find a revision to Vogtle Electric Generating Plant, Unit 1 (VEGP-1), First Ten-Year Inservice Inspection (ISI) Program, Relief Request RR-5. The subject relief request is being submitted for NRC review and approval and concerns the volumetric examination of Reactor Pressure Vessel bottom head circumferential weld 11201-V6-001-W07. Only a limited examination of this weld could be performed inservice because in-core flux instrumentation tubes that prevent examination of the entire weld length physically obstruct the weld. No alternative examination is practical. As a result, it is necessary that we request relief from the requirements of Section XI to the 1983 Edition (with Summer 1983 Addenda) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Please refer to the enclosed relief request revision for additional details.

The enclosed revision to Relief Request RR-5 supersedes the version submitted in our letter LCV-1124 dated December 1, 1997, as well as additional information provided in our letter LCV-1124-A dated May 26, 1998.

When the NRC approves Relief Request RR-5, the VEGP-1 First Ten-Year ISI Program document ISI-P-006 will be updated internally to Revision 9 to reflect approval of RR-5 and that of Relief Request RR-65 which was addressed in our letter LCV-1124-A. The internal update will incorporate any purely administrative changes, e.g., updating the List of Effective pages, resulting from the approval of RR-5 and RR-65. After the subject document is updated, it will be retired since examinations and tests required for

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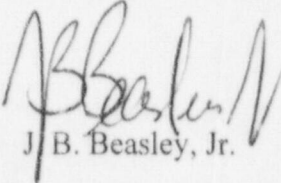
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the first ten-year inspection interval have been completed for VEGP-1. The internal update of VEGP-1 First Ten-Year ISI Program document ISI-P-006 to Revision 9 will not be submitted to the NRC as a result of the NRC prior review and approval of these and other changes addressed in our December 1, 1997, and May 26, 1998 submittals. The purely administrative changes to the subject document will not change the overall intent of the document.

A copy of this submittal is being provided directly to Mr. M. T. Anderson of INEEL Research Center.

Should there be any questions in this regard, please contact this office.

Sincerely,



J. B. Beasley, Jr.

JBB/JAE/jae

Enclosure: Relief Request RR-5 (Revision 9 to VEGP-1 First Ten-Year ISI Program)

xc: INEEL Research Center
Mr. M. T. Anderson (w/enclosure)

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Mr. L. A. Reyes, Regional Administrator (w/enclosure)
Mr. J. Zeiler, Senior Resident Inspector, Vogtle (w/enclosure)

ENCLOSURE
TO
SOUTHERN NUCLEAR OPERATING COMPANY
LETTER LCV-1124-C

VOGTLE ELECTRIC GENERATING PLANT
REVISION TO UNIT 1 RELIEF REQUEST RR-5

System/Component for Which Relief is Requested

Vogtle Electric Generating Plant (VEGP) Reactor Pressure Vessel (RPV) bottom head circumferential weld 11201-V6-001-W07.

Code Requirement for Which Relief is Requested

Table IWB-2500-1, Examination Category B-A, Item No. B1.21 as found in the 1983 Edition of ASME Section XI with Addenda through Summer 1983, requires that a volumetric examination of the pressure-retaining circumferential welds in the RPV heads be performed. The applicable examination volume is shown in ASME Section XI, Figure IWB-2500-3, and includes one hundred percent (100%) of the weld length.

Basis for Relief

This "dollar plate" weld was examined from inside the RPV in 1996 at the end of the first 10-year interval using remote "contact" techniques and the Westinghouse inside diameter (ID) inspection tool. There were no recordable indications. The composite examination volume coverage using this technique was limited to approximately twenty-nine (29%) of the examination volume; however, the coverage does reflect a minimal sampling of weld and heat affected zone in several locations around the weld. For instance, approximately forty-five percent (45%) of the weld volume was examined from the upstream side of the weld (when looking for indications lying parallel to the weld using 45 and 60-degree transducers) with the limitations due to in-core flux instrumentation tubes that penetrate the bottom of the RPV head at or immediately adjacent to weld 11201-V6-001-W07. Approximately fifteen percent (15%) was examined from the opposite side with more limitations as a result of these numerous instrument tubes. As seen in Attachments 1 and 2 to this relief request, approximately thirty (30) peripheral in-core flux instrumentation tubes are located within about 18 inches of the centerline of the subject weld, with some located at or in the weld.

The Westinghouse ID inspection tool used for the examination utilized a transducer sled in contact with the surface of the head. This sled was manipulated around the instrument tubes to achieve maximum practical coverage for this tool. However, this tool had a limited degree of motion, which, when combined with the curved geometry of the bottom head and the limitations posed by the instrument tubes, had limited ability to perform complete Code examinations. More recent Westinghouse inspection tool designs (which were not available during the VEGP-1 examinations), such as the one used during the 1998 VEGP-2 examinations, have more advanced robotics with multiple degrees of motion. Coverage using the more recent inspection tool was in excess of 70% of the volume.

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Alternate Examination

Because of the physical interference presented by the instrumentation tubes in the proximity of the subject weld, no supplemental examination is proposed. It should be noted, however, that an overall, general visual examination (VT-3) of the RPV was performed in accordance with the requirements of ASME Section XI, Category B-N-1, Item No. B13.10, during the maintenance/refueling outage in which weld 11201-V6-001-W07 was volumetrically examined, i.e., during VEGP-1 Maintenance/Refueling Outage 1R6. Examinations scheduled for the end of the second 10-year interval using newer generation equipment should provide coverage equivalent to or better than that for the recent VEGP-2 examinations.

Justification for the Granting of Relief

The ID coverage of weld 11201-V6-001-W07 during the 10-year inservice examinations was limited during the first 10-year interval examinations, but was done to the extent practical, as allowed by the existing equipment. Two options to increase this coverage were evaluated by SNC, but both were determined to represent an extreme hardship. These options are:

- Supplemental OD Examinations – If OD examinations were to be performed, they would have to be performed on the entire accessible length of the weld, because correlation of the numerous ID limitations to a corresponding location on the OD would be impractical. To perform the examination from the OD personnel would need to erect scaffolding; remove the insulation; perform any required weld preparation; ultrasonically examine the weld; re-install the insulation; and remove the scaffolding. General area dose rates at the bottom of the RPV (as measured for Unit 2 during its sixth maintenance/refueling outage) are approximately 220mr/hr, with a contact dose rate at the insulation surface of approximately 1 R/hr. It was conservatively calculated that the dose to perform the weld examinations from the OD of the vessel would be in excess of 11.5 R. A radiation dose of this magnitude, to perform examination of one weld, is contrary to the principles of as low as reasonably achievable (ALARA) and is considered by SNC to be an extreme hardship. Even if it was practical to perform such an examination, Code coverage would be improved, but it is unlikely that Code coverage of greater than ninety percent (90%) could be obtained due to the proximity of the instrument tubes.
- Use of Newer, Present Day Technology - Using newer technology and performing the examinations prior to the second 10-year interval examinations would require removal of the lower internals and mobilization of an inspection vendor to perform one examination. This is also considered by SNC to constitute an extreme hardship.

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Justification for the Granting of Relief (continued)

Weld 11201-V6-001-W07 was ultrasonically examined (manually) during the shop fabrication of the RPV at Combustion Engineering, using 0, 45, and 60-degree transducers. These examinations were performed from both the inside and the outside of the vessel to assure that no unacceptable flaws were present. A review of the data for this weld indicates that no recordable indications were found in the weld or in the adjacent base material.

During the preservice examinations, seventy-four percent (74%) of this weld was re-examined from the ID using a remote "immersion" technique, where ultrasonic transducers were maintained at a set distance above the surface of the bottom head. There were no recordable indications found (except geometry resulting from the presence of the instrument tubes). This coverage provided further assurance that no unacceptable flaws were present.

It should be noted that coverage was greater for the "immersion-type" preservice examinations than for the "contact-type" first 10-year inservice examination because the curved surfaces and the instrument tubes had much less effect on a transducer package that was being manipulated at a stand-off distance above the weld. It should also be noted that "immersion" type techniques were not used by domestic vendors during the 10-year inservice examinations.

The "contact-type" first 10-year inservice examinations were completed as discussed in the "Basis for Relief" and no recordable indications were found in this region. The Westinghouse-prepared paper entitled "*A Discussion of the Adequacy of ISI Coverage: The Bottom Head Dollar Plate Weld at Vogtle Unit 1*" indicates that this result is consistent with belief that no mechanisms of damage are present which could initiate or propagate a flaw in this region during inservice conditions. The design usage factor for this location was calculated to be less than 0.01 for the entire design life of the vessel. The vessel is clad with stainless steel, so there are no corrosive effects of the water environment. Even if the cladding were missing, Westinghouse has indicated that service experience at a number of plants has shown that no corrosion occurs during service. Irradiation damage was also considered as a possibility, but the dollar weld is located in a very low fluence region. Although detailed mapping of the fluence as a function of weld location has not been performed for VEGP-1, such a mapping has been performed for a similar plant, and the fluence in this region was found to be below the threshold for any measurable radiation damage.

To provide added assurance that the structural integrity of weld 11201-V6-001-W07 is being maintained, Westinghouse also performed a flaw tolerance evaluation of the weld. This evaluation concluded that the dollar weld has a large tolerance for the presence of flaws,

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Justification for the Granting of Relief (continued)

regardless of their size, shape, or location, and there should be no concern about the lack of Code coverage during the recent 10-year inservice examination. It also concluded that the integrity of the vessel is unaffected and remains excellent.

SNC has demonstrated there is adequate assurance that the structural integrity of weld 11201-V6-001-W07 is being maintained and that compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality or safety. Therefore, relief should be granted pursuant to the requirements of 10CFR50.55a(a)(3)(ii).

Implementation Schedule

This relief request is applicable to the First Ten-Year Interval on VEGP-1, which concluded May 30, 1997, exclusive of the one-year period allowed by ASME Section XI, IWA-2400(c).

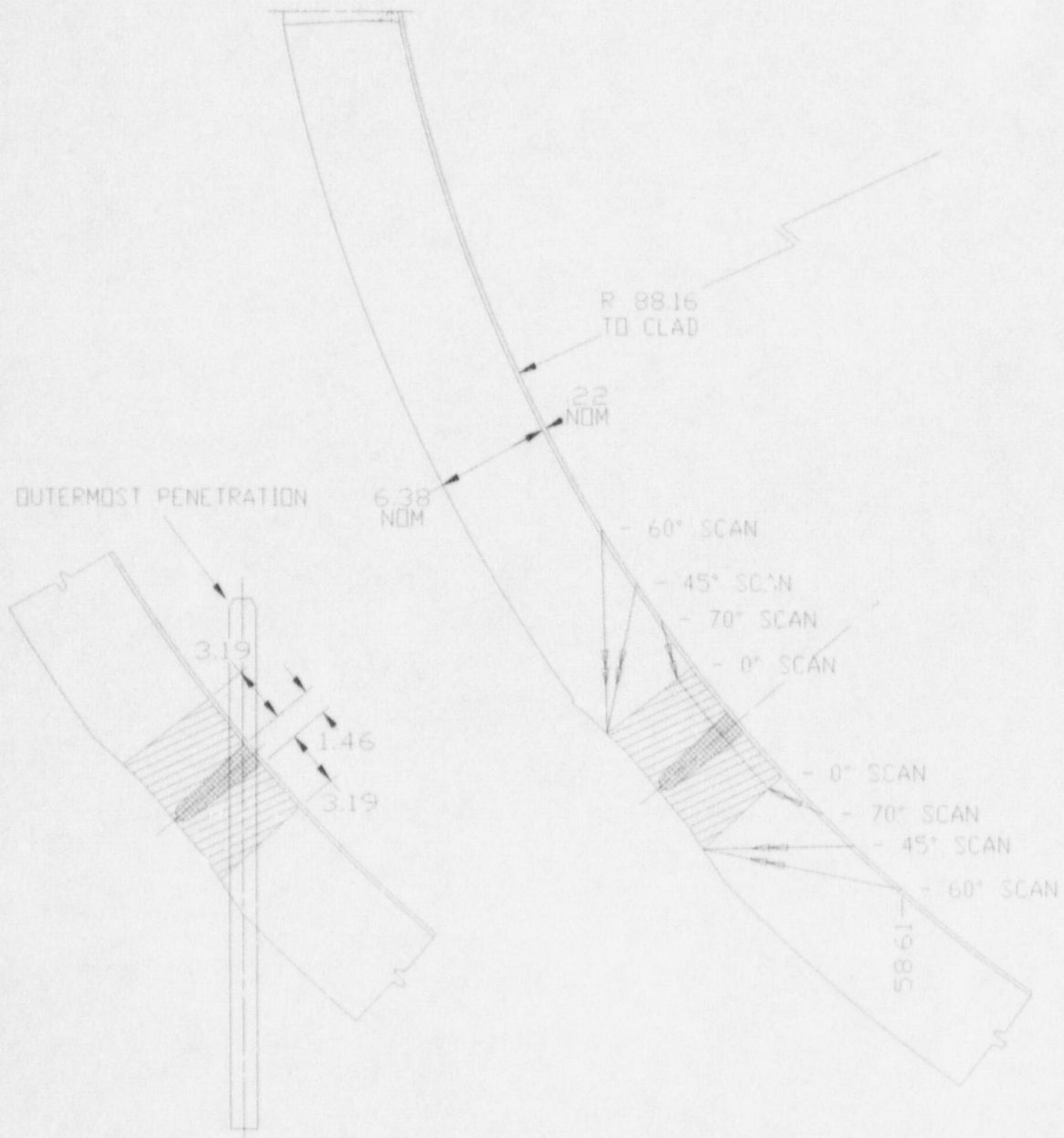
VEGP-1

RR-5

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ATTACHMENT 1

Cross Sectional View Weld W07



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ATTACHMENT 2

In-Core Flux Instrumentation Tubes

PENETRATION No. (1.50 IN. NOM)	DISTANCE FROM VESSEL C' (IN.)	DISTANCE FROM WELD W07 CL (IN.)
32, 33	49.35	18.17
34, 35	50.80	16.73
36, 37	51.50	16.03
38, 39, 40	53.54	13.99
41, 42	54.21	13.32
43, 44	59.26	8.27
45, 46, 47	59.86	7.67
48, 49	61.05	6.48
50, 51	61.63	5.90
53, 54	64.48	3.05
55, 56, 57, 58	66.12	1.45
52	68.26	0.73 (OUTSIDE)

Section - RPV Bottom Head

