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

August 31, 1992

Docket Nos. 50-327
and 50-328

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford, Vice President
Nuclear Assurance, Licensing & Fuels
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Dr. Medford:

SUBJECT: REQUEST FOR RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS SECTION XI CODE REQUIREMENTS- REACTOR VESSEL NOZZLE TO VESSEL WELD EXAMS. SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 (TAC NOS. M81349 AND M81350)

By letter dated August 21, 1991, the Tennessee Valley Authority (TVA) requested relief from the American Society of Mechanical Engineers (ASME) Section XI Code requirements in order to establish a new ten-year examination schedule for the second, third, and fourth inspection intervals of the reactor vessel (RV). The adjustment would allow performance of the required examinations to coincide with removal of the RV core barrel during the third period of each inspection interval by performing an additional examination during the first ten-year inspection interval and imposing a new examination schedule for the remaining intervals. The relief requests for each unit are identical and are designated ISI-14 for Unit 1 and ISI-15 for Unit 2.

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory, has determined that the proposed inspection sequence meets the Code scheduling requirements for the subject RV examinations. Therefore, relief is not required during the first 10-year inspection interval.

In addition, the request to change the examination schedule for the second inspection interval must be evaluated to future editions and addenda of the Code. At the present time, the staff believes that this relief request could be considered acceptable for subsequent inspection intervals, if the time period between specific weld examinations does not exceed ten years plus Code

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allowed extensions. Since proposed alternatives to Code requirements can only be authorized for examinations in the present interval, a separate relief request will have to be submitted for the next (second) 10-year ISI interval after the applicable Code for the second interval has been established.

Details of the staff's analysis is discussed in the enclosed evaluation.

Sincerely,

Original signed by

Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure: Evaluation

cc w/enclosure:
See next page

OFC	PDII-4/LA	PDII-4/PM	PDII-4/D	
NAME	MSanders	DLaBarge:as/dw	FHebdon	
DATE	8/31/92	8/31/92	8/31/92	

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

ENCLOSURE

EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

OF THE FIRST TEN-YEAR INTERVAL INSERVICE INSPECTION RELIEF REQUEST

REACTOR VESSEL NOZZLE TO VESSEL WELDS

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NUMBERS: 50-327 AND 50-328

1.0 INTRODUCTION

Technical Specification 4.0.5 for Sequoyah Nuclear Plant (SQN), Units 1 and 2, states that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality or safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the issuance of the operating license, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Sequoyah Nuclear Plant, Units 1 and 2, first 10-year inservice inspection (ISI) interval is the 1977 Edition through Summer 1978 Addenda. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

By letter dated August 21, 1991, the licensee, Tennessee Valley Authority (TVA), submitted a relief request for the first 10-year ISI interval, which is scheduled to end September 15, 1994, for SQN Unit 1 and February 21, 1995, for SQN Unit 2. The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the subject request as indicated below.

2.0 EVALUATION

Request for Relief No. 14 (Unit 1) and No. 15 (Unit 2), Examination Categories B-D and B-F, Item Nos. B3.90, B3.100, and B5.10, Scheduling of RPV Nozzle-to-Vessel Welds, Nozzle Inner Radii, and Nozzle-to-Safe End Welds:

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-D, Item Nos. B3.90 and B3.100 requires 100% volumetric examination of the RPV nozzle-to-vessel welds and nozzle inner radius sections, as defined by Figure IWB-2500-7. Footnotes 3 (1st Inspection Interval) and 4 (Successive Inspection Intervals 2nd, 3rd, and 4th) require that at least 25% but not more than 50% (credited) of the nozzles shall be examined by the end of the 1st period and the remainder by the end of the interval. Footnote 5 allows partial deferral of the inspection to the end of the interval if examinations are conducted from inside the component and the nozzle weld is examined by the straight beam ultrasonic method from the nozzle bore; the remaining examinations required to be conducted from the shell inside diameter may be performed at or near the end of each inspection interval.

Examination Category B-F, Item B5.10, requires both 100% surface and volumetric examination as defined by Figure IWB-2500-8. Footnote 2 (Successive Inspection Intervals 2nd, 3rd, and 4th) states, "For the reactor vessel nozzle safe-ends, the examinations may be performed coincident with the vessel nozzle examinations required by Examination Category B-D."

Paragraph IWB-2420(a) requires that the sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval to the extent practical.

Licensee's Code Relief Request: Relief is requested to alter the inspection schedule requirements (Examination Category B-D, Footnotes 3 and 4) by repeating the first period examinations and performing all of the remaining Code-required nozzle and dissimilar metal weld examinations during the third inspection period of the first interval. Performance of these examinations will establish a new ten-year examination schedule for the second, third and fourth inspection intervals.

Licensee's Basis for Requesting Relief: The Licensee states the benefits of this proposal as follows:

- One-time installation and removal of the automated inspection device from the RV flange rather than twice during an inspection interval.
- Performance of additional RV outlet nozzle and nozzle-to-safe end weld examinations during the first inspection interval (repeat of first period examinations).
- An overall reduction in personnel radiation exposure (one automated examination versus two), thus supporting ALARA considerations.
- A reduction in the number of times automated devices and associated materials and equipment must be decontaminated (reduces generation of radwaste).
- A cost saving to TVA of 1.8 million dollars over the 40-year life of the plant.

Licensee's Proposed Alternative Examination: The Licensee proposes to repeat the first period examinations in the third period, thereby exceeding the Code-required examinations for the first interval. During the second, third, and fourth inspection intervals, all RV nozzle-to-vessel welds, inside radius sections, and RV nozzle-to-safe end welds will be examined during the third inspection period.

Staff Evaluation: The proposed inspection sequence meets the Code scheduling requirements for the subject RPV outlet nozzle-to-vessel welds, outlet nozzle inner radius sections, and nozzle-to-safe end welds at SQN, Units 1 and 2, for the first 10-year inspection interval. Therefore, relief is not required during the first 10-year inspection interval.

In response to the Licensee's request to defer the subject examinations for the second inspection interval, the examination schedule change for the second inspection interval must be evaluated to future editions and addenda of the ASME Code as defined by 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(b)(2). At the present time the staff believes that this relief request could be considered acceptable for subsequent inspection intervals, if the time period between specific weld examinations does not exceed ten years plus Code allowed extensions. With the large population of operating reactors, the examination of nozzles of a given vessel being distributed between an outage in the first period and an outage in the third period can be eliminated and concentrated in an outage in the third period of the interval.

Proposed alternatives to Code requirements can only be authorized for examinations in the present interval. Therefore, a separate relief request will have to be submitted for the next (second) 10-year ISI interval after the applicable Code for the second interval has been established.

3.0 CONCLUSION

Paragraph 10 CFR 50.55a(g)(4) requires that components (including supports) that are classified as ASME Code Class 1, 2, and 3 meet the requirements, except design and access provisions and preservice requirements, set forth in applicable editions of ASME Section XI to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The Licensee has reported its intention to perform all reactor vessel examinations during the third period of the first interval. For this, relief is not required. All subsequent interval relief requests must be reviewed during those intervals.

Principal Contributor: D. Smith

Date: August 31, 1992