February 14, 1996

Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN - SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 (TAC NOS. M94115 AND M94116)

Dear Mr. Kingsley:

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory, has reviewed and evaluated the information provided by the Tennessee Valley Authority (TVA) in its letter dated November 21, 1995. As a result, the staff has identified the need for additional information in order to complete our review of the Sequoyah Nuclear Plant, Units 1 and 2 Second 10-year interval inservice inspection program plan. The staff's request for additional information is attached. In addition, the staff is supplying Appendix A to the enclosure, "Inservice Inspection: Guidance for Preparing Requests for Relief from Certain Code Requirements Pursuant to 10 CFR 50.55a(g)(5)," for your use.

This requirement affects nine or fewer respondents and, therefore, is not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,

Original signed by

David E. LaBarge, Sr. Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure: Request for Additional Information

cc w/enclosure: See next page

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REQUEST FOR ADDITIONAL INFORMATION

SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

SEQUOYAH NUCLEAR PLANT 1 & 2

1. Scope/Status of Review

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except design and access provisions and preservice examination requirements, set forth in 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. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during successive 120-month inspection intervals comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of a successive 120-month interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of the Code that are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Nuclear Regulatory Commission (NRC) approval.

By letter dated November 21, 1995 the Tennessee Valley Authority (TVA), licensee for the Sequoyah Nuclear Plant (SQN) Units 1 And 2, submitted the American Society Of Mechanical Engineers (ASME) Section XI Programs for the Second Inspection Inservice Interval. It consists of Attachments 1 through 4 of Enclosure 1 and Attachments 1 and 2 of Enclosure 2 to the licensee's program. Based on our review of Attachment 1, "Site Standard Practice 6.10, ASME Section XI ISI/NDE Augmented Nondestructive Examination Programs," Attachment 2, "O-SI-DXI-000-114.2, ASME Section XI ISI/NDE Program," and Attachment 3, "ASME System Pressure Testing Program Basis Document," we have identified the need for additional information. For the purpose of this request for additional information (RAI), the three attachments will be referred to as the SQN, Second 10-Year Interval Inservice Inspection Program Plan.

The SQN, Second 10-Year Interval Inservice Inspection Program Plan was developed to meet the requirements of the 1989 Edition of Section XI of the ASME Code, except that the extent and frequency of examination for Category B-J piping welds has been determined by the 1974 Edition through Summer 1975 Addenda (74S75) as allowed by 10 CFR 50.55a(b). As required by 10 CFR 50.55(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief, the licensee shall submit information to the NRC to support that determination.

ENCLOSURE

2. Additional Information Required

a. Provide isometric and/or component drawings showing the Code Class 1 and 2 piping welds, components, and supports that Section XI of the ASME Code requires to be examined during the second 10-year inspection interval. The requested items will permit the staff to determine if the extent of ISI examinations meets the applicable Code requirements.

b. Provide a list of the ultrasonic calibration standards being used during the second 10-year ISI interval. This list should include the calibration standard identifications, material specifications, sizes, and any variance from Code requirements.

c. Clarify the statement in Section 1.3 of Attachment 2 that "Certification of NDE personnel shall be in accordance with the 1984 Edition of ASNT SNT-TC-1A." Does this include ultrasonic examination personnel? Is Appendix VII of the 1989 Edition of ASME Section XI being used for qualification of personnel performing ultrasonic examinations? If not, submit a request for relief that includes your basis for not meeting the requirements of Appendix VII.

d. Prepare a request for relief for each Code case not referenced in Regulatory Guide 1.147 that is to be used. (Section 1.3 of Attachment 2 adopts Code Cases N-198-1, N-494-2, N-509, N-521, and N-524 for use at SQN. As noted in this section these Code Cases have not been approved for use by the NRC.) Appendix A, "Inservice Inspection: Guidance for Preparing Requests for Relief from Certain Code Requirements Pursuant to 10 CFR 50.55a(g)(5)," is attached for your use as a guide for preparing requests for relief.

e. Confirm that a request for relief would be submitted if "essentially 100%" of a required examination volume or area cannot be examined. [Section 7.1(D) of Attachment 2 of the licensee's program plan states "When less than the required ASME Section XI code examination volume or area is examined, the percentage examined shall be documented on the examination data sheet. The cause of the limitation shall be clearly specified as part of the data sheet documentation. Areas that are inaccessible or partially inaccessible shall be handled in accordance with SSP-6.10."]

f. Confirm that SQN plans to select Examination Category B-J welds for examination during the second 10-year interval in compliance with the requirements of IWB-2420(a). If not, provide a request for relief that includes the basis for not meeting the subject requirements. [Based on Section 7.2(A)(6) of Attachment 2, it appears that a different population of Examination Category B-J welds will be examined during the second 10-year interval than was examined during the first 10-year interval. ASME Section XI Paragraph IWB-2420(a) requires component examinations performed during the first inspection interval be repeated during successive inspection intervals.]

g. Considering the safety significance of the Residual Heat Removal, Emergency Core Cooling, and Containment Spray systems, describe any plans for volumetric examination of a sample of thin-wall Code Class 2 piping welds to assure the continued integrity of the subject systems. [The Residual Heat Removal, Emergency Core Cooling, and Containment Spray systems are critical to the safe shutdown of the plant. It has been recognized that current Code examination requirements exclude selection of thin-wall piping welds (<3/8 inch) in the subject systems. As a result, flaws in thin-wall piping would not be detected until through-wall leakage occurs. In section 7.2(B)(5) & (6) of the licensee's program plan, it has been noted that Class 2 welds <3/8 inch are included in the total Class 2 piping weld population but are excluded from examinations. The staff believes that it is technically prudent to perform augmented volumetric examination of thin-wall piping.]

h. Clarify how Class 1 supports are selected for examination at SQN. Based on Section 8.4 of Attachment 1 to Attachment 2 of the program plan, it appears that the licensee is selecting 25 percent of the supports associated with areas selected as part of the 25 percent selection requirements of Examination Category B-J. Code Case N-491 requires 25 percent of <u>all</u> non-exempt Class 1 supports be selected for examination. Is it the licensee's intention not to meet the selection requirements for supports as contained in IWF of the 1989 Edition of Section XI or in Code Case N-491? If so, a request for relief for alternative selection criteria for Class 1 piping supports is required.

i. Provide a detailed sketch of the examination areas for Requests for Relief 1-ISI-2 and 2-ISI-2, including all limitations and coverage plots. These relief requests describe lifting lug and weld taper limitations to examining the reactor vessel closure head-to-flange weld. Will a partial examination be performed from the flange face?

j. Provide a listing of the integrally welded attachments that will not be examined as a result of Requests for Relief 1-ISI-3 and 2-ISI-3, which seek to use the exemptions for Auxiliary Feedwater Systems granted by later editions of Section XI.

k. Using the 1989 Edition of Section XI, re-evaluate the need for Request for Relief ISPT-05, which requests relief from Table IWB-2500-1 Examination Category B-P, Footnote 1 quoted from the Summer 1978 Addenda to Section XI. The licensee has committed to following the 1989 Edition of Section XI. Is this an oversight? If relief is deemed necessary, re-submit this relief request and include a technical discussion that explains how the proposed alternative provides an adequate level of quality and safety.

l. Verify that there are no additional relief requests, other than those submitted on November 21, 1995. If additional relief requests are required, they should be submitted for staff review.

APPENDIX A

INSERVICE INSPECTION: GUIDANCE FOR PREPARING REQUESTS FOR RELIEF FROM CERTAIN CODE REQUIREMENTS PURSUANT TO 10 CFR 50.55a(g)(5)

The guidance in this Appendix is intended to illustrate the type and extent of information that is necessary in a "request for relief" submittal for those items that cannot be fully inspected to the requirements of ASME Code Section XI.

A. Description of Requests for Relief

The inservice inspection program should contain requests for relief that identify the inspection and pressure testing requirements of the applicable portion of Section XI that are deemed impractical because of the limitations of design, geometry, radiation considerations, or material of construction of the components. Each request for relief should provide the information identified in the following sections of this Appendix for the inspections and pressure tests considered impractical.

B. Request for Relief From Certain Inspection and Testing Requirements

Many requests for relief from inservice inspection requirements submitted by licensees have not been supported by adequate descriptive and detailed technical information. This detailed information is necessary to: (1) document the impracticality of the ASME Code requirements because of the limitations of design, geometry, and materials of construction of components; and (2) determine whether the use of alternatives will provide an acceptable level of quality and safety.

Relief requests submitted with a justification such as "impractical," "inaccessible," or any other categorical basis, require additional information to permit an evaluation of that relief request. The objective of the guidance provided in this section is to illustrate the extent of the information required to make a proper evaluation and to adequately document the basis for the granting of relief in the Safety Evaluation Report. Requests for additional information and delays in completing the review can be considerably reduced if this information is provided in the licensee's initial submittal.

Each relief request should contain adequate information to act as a "stand alone" document and should include the following:

1. The ASME Code Class, Examination Category, and Item Number(s) or the specific Code paragraph number from which relief is being requested.

2. ASME Code Section XI examination or test requirements for the weld(s) and/or component(s) for which relief is being requested.

3. The number of items associated with the requested relief.

4. Identification of the specific ASME Code requirement that has been determined to be impractical.

5. An itemized list of the specific welds(s) and/or component(s) for which relief is requested.

6. An estimate of the percentage of the Code-required examination that can be completed for each of the individual welds(s) and/or component(s) requiring relief.

7. Information to support the determination that the requirement is impractical; i.e., state and explain the basis for requesting relief. If the Code-required examination cannot be performed because of a limitation or obstruction, describe or provide drawings showing the specific limitation or obstruction.

8. Identification of the alternative examinations that are proposed: (a) in lieu of the requirements of Section XI; or (b) to supplement partial Section XI examinations performed.

9. A discussion of the failure consequences of the weld(s) and/or component(s) that would not receive the Code required examination. Discuss any changes expected in the overall level of plant safety by performing the proposed alternative examination in lieu of the examination required by Section XI. If it is not possible to perform alternative examinations, discuss the impact on the overall level of plant quality and safety.

10. State when the proposed alternative examinations will be implemented and performed.

11. State when the request for relief would apply during the inspection period or interval (i.e., whether the request is to defer an examination).

12. State the time period for which the requested relief is needed.

Technical justification or data must be submitted to support the relief request. Stating without substantiation that a change will not affect the quality level is unsatisfactory (i.e., because a licensee does not agree with a Code requirement is not considered justification for the granting of relief). If the relief is requested for inaccessibility, a detailed description or drawing that depicts the inaccessibility must accompany the request.

C. <u>Request for Relief for Radiation Considerations</u>

Radiation exposures of test personnel to accomplish the examinations prescribed in ASME Code Section XI can be an important factor in determining whether, or under what conditions, an examination must be

performed. A request for relief must be submitted by the licensee in the manner described above for inaccessibility and must be subsequently approved by the NRC staff.

Some of the radiation considerations will only be known at the time of the test. However, from experience at operating facilities, the licensee generally is aware of those areas where relief will be necessary and should submit as a minimum (in addition to the previous general requirements in Section B) the following additional information regarding the request for relief:

1. The total estimated man-rem exposure involved in the examination.

2. The radiation levels at the test area.

3. Flushing or shielding capabilities that might reduce radiation levels.

4. A discussion of the considerations involved in remote inspections.

5. The results of any previous inservice inspections regarding ALARA for the welds for which the relief is being requested.

SUGGESTED FORMAT FOR RELIEF REQUESTS

LICENSEE/UTILITY NAME
PLANT NAME, UNIT __
_____ 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. _____

I. Provide an itemized list of the specific weld(s) and/or component(s) for which relief is requested. Include the ASME Code Class, Examination Category, and Item Number(s). Relief cannot be granted for generic Requests for Relief.

NOTE: Each Relief Request should contain only one Examination Categor .

EXAMPLE:

System/Component(s) for Which Relief is Requested: Six RPV Nozzle-to-Pipe Welds

Examination Category B-J, Item B9.10

36" Outlet Reactor Nozzel (A)-to-Pipe Weld (WELD-1)
36" Outlet Reactor Nozzel (B)-to-Pipe Weld (WELD-2)
28" Inlet Reactor Nozzel (C)-to-Pipe Weld (WELD-3)
28" Inlet Reactor Nozzel (D)-to-Pipe Weld (WELD-4)
28" Inlet Reactor Nozzel (E)-to-Pipe Weld (WELD-5)
28" Inlet Reactor Nozzel (F)-to-Pipe Weld (WELD-6)

II. Report the Code-requirement(s) for the specific weld(s) and/or component(s) for which relief is being requested.

EXAMPLE:

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-J, Item B9.11 requires an OD surface examination of the weld and adjacent base metal and a volumetric examination of the weld and adjacent base metal (interior one-third volume) on all dissimilar metal piping welds and terminal end piping welds at vessels as defined by Figure IWB-2500-8.

III. Identify the specific Section XI examination or test requirements for the weld(s) and/or component(s) for which relief is being requested.

EXAMPLE

Code Requirement from Which Relief is Requested: Relief is requested from performing the Code-required surface examination on above

identified Reactor Pressure Vessel inlet and outlet nozzle-to-pipe welds.

IV. Provide technical justification to support the determination that the Code requirement is impractical: i.e., state and explain the basis for requesting relief. If the Code-required examination cannot be performed because of a limitation or obstruction, describe or provide drawings showing the specific limitation or obstruction.

- If a partial Code-required examination can be performed, provide an estimate of the percentage of the Code-required examination that can be completed for each of the individual weld(s) and/or component(s) covered by the Request for Relief.

- If justification for the request for relief is based on radiation considerations (ALARA), address the following:

a. the total estimated man-rem exposure involved in the examination;

b. the radiation levels at the test area;

c. flushing or shielding capabilities that might reduce radiation levels;

d. proposed alternative inspection techniques;

e. the considerations involved in remote inspections;

f. similar components in redundant systems or similar welds in the same systems that can be inspected;

g. the results of previous inservice inspections that may help provide technical justification for the granting of relief; and

h. the failure consequences of the component(s) that would not receive the Code required examination(s).

EXAMPLE

Basis for Relief: The subject welds are located inside the reactor vessel primary shield wall (see attached Drawing No. NLU-RPV-XX.xx) and the Code-required examination would necessitate removal of sand plugs and insulation to gain access into the high radiation environment. NLU (Name Licensee/Utility) estimates the radiation level would be in excess of 10 R/hr at the examination area and that a cumulative exposure of 87 Person-Rem would be necessary to complete the Code-required surface examination of these welds.

VII. Discuss the period of time for which relief is required.
NOTE: Requests for relief are only applicable for the 10-year inspection interval during which relief was requested and approval does not apply for subsequent inspection intervals.

EXAMPLE

Implementation Schedule: Four of the subject examinations will be performed during the first period, and the remaining examinations will be performed during the third period of the _____ 10-year interval.

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Tennessee Valley Authority

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