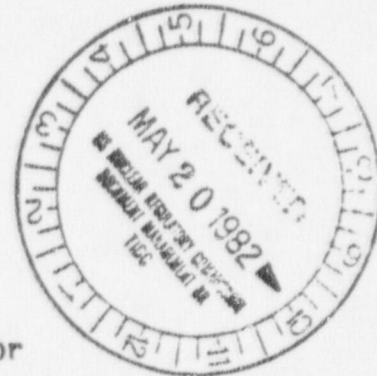


MAY 18 1982



Docket Nos. 50-443/444

MEMORANDUM FOR: Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

FROM: William V. Johnston, Assistant Director
for Materials & Qualifications Engineering
Division of Engineering

SUBJECT: PRESERVICE AND INSERVICE INSPECTION PROGRAMS:
SEABROOK STATION, UNITS 1 AND 2, PUBLIC SERVICE
CO. OF NEW HAMPSHIRE

Plant Name: Seabrook Station, Units 1 & 2
 Suppliers: Westinghouse; United Engineers and Construction
 Docket Numbers: 50-443/444
 Licensing Stage: OL
 Responsible Branch and Project Manager: LB-3, L. L. Wheeler
 Reviewers: J. R. Gleim, M. R. Hum, and T. Taylor, PNL
 Requested Completion Date: May 7, 1982
 Description of Task: Draft SER Reviewing the Preservice and Inservice
Inspection Programs
 Review Status: Applicant's Response Required
 SER Section 5.2.4 - Open Issue
 SER Section 5.4.2.2 - Confirmatory Issue
 SER Section 6.6 - Open Issue

The Inservice Inspection Section, Materials Engineering Branch, Division of Engineering has reviewed the available information in the FSAR and the proposed Technical Specifications related to the preservice and inservice inspections.

Our review has determined that the steam generator tube inservice inspection (SER Section 5.4.2.2) is acceptable because the applicant has committed to use Regulatory Guide 1.83 Revision 1, Section XI of the ASME Code, and the Westinghouse Standard Technical Specification (STS). Seabrook has Westinghouse Model F steam generators. However, we are identifying this as a Confirmatory Issue because (1) we expect the STS to be revised before licensing based on NRC generic investigations, and (2) the applicant has not completed the evaluation of the Model F design and has used some information from the Model D design as a basis for his conclusions. We will close SER Section 5.4.2.2 after we review and accept the Final Technical Specification.

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DATE								

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The applicant has not provided substantive information about the Preservice Inspection (PSI) Program in the FSAR Sections 5.2.4 and 6.6 which merely reference the Technical Specifications as the source of information. Unfortunately, the detailed program information was deleted from the Westinghouse STS several years ago based on generic instructions to all licensees and applicants from the Division of Licensing. Standard Review Plans 5.2.4 and 6.6 require that we review the applicant's Preservice Inspection Program and Inservice Inspection Program. To meet the SER completion date of August 7, 1982, we will require two copies of the applicant's PSI Program before July 7, 1982. In the event that the applicant has not completed the PSI Program required by 10 CFR 50.55a(g)(3), we request that he provide an estimated completion date and schedule for completing the preservice examinations.

Although the applicant states in the FSAR Sections 5.2.4 and 6.6 that he intends to comply with all requirements of Section XI of the ASME Code, no applicant has been able to meet this objective completely. We request that the applicant revise the FSAR as appropriate and provide an estimated completion date for identifying limitations to compliance with the ASME Code with a supporting technical justification.

Our Draft SER Sections 5.2.4, 5.4.2.2 and 6.6, which reflect the status of our review, are provided as Attachment 1. Additional guidance for the preparation of the PSI Program and relief requests for the ASME Code requirements is provided in Attachment 2. The MTEB reviewers and our consultant, Battelle PNL, are prepared to meet with the applicant to resolve this issue.

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William V. Johnston, Assistant Director for
Materials & Qualifications Engineering
Division of Engineering

Attachments:
As stated

DISTRIBUTION:
DOCKET Files
MTEB Reading Files
MTEB RE 1-1 Seabrook Units 1 & 2

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DATE	5/13/82	5/13/82	5/13/82	5/13/82	5/16/82

ATTACHMENT 1

DEARBORN STATION UNITS 1 & 2

SAFETY EVALUATION REPORT

MATERIALS ENGINEERING BRANCH

INSERVICE INSPECTION SECTION

5.2.4 Reactor Coolant Pressure Boundary Inservice Inspection and Testing

5.2.4.1 Compliance with the Standard Review Plans

The July 1981 Edition of the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," (NUREG-0800) includes Section 5.2.4, "Reactor Coolant Pressure Boundary Inservice Inspection and Testing." Our review is continuing because the applicant has not submitted the Preservice Inspection Program and has not completed all preservice examinations. Our review to date was conducted in accordance with Standard Review Plan (SRP) Section 5.2.4 except as discussed below.

Paragraph II.4, "Acceptance Criteria, Inspection Intervals," has not been reviewed because this area applies only to inservice inspection (ISI), not to the Preservice Inspection (PSI). This subject will be addressed during review of the ISI program after licensing.

Paragraph II.5 "Acceptance Criteria, Evaluation of Examination Results" has been reviewed and the applicant has stated that data will be evaluated in accordance with ASME Code Section IWB-3000, "Standards for Examination Evaluation." However, ongoing NRC Generic Activities and research projects indicate that the presently specified ASME Code procedures may not always be capable of detecting the acceptable size flaws specified in the IWB-3000 standards. For example, ASME Code procedures specified for volumetric examination of reactor vessels, bolts and studs, and piping have not proven to be capable of detecting acceptable size flaws in all cases. We will continue to evaluate development of improved procedures and will require that these improved procedures be made a part of the inservice examination requirements.

We have not reviewed the applicant's repair procedures based on ASME Code Section IWB-4000, "Repair Procedures" because the applicant has not provided specific information. Repairs are not generally necessary in the PSI program. This subject will be addressed during our review of the ISI Program.

Paragraph II.8, "Acceptance Criteria, Relief Requests," has not been completed because the applicant has not identified all limitations to examination.

5.2.4.2 Examination Requirements

General Design Criterion 32, "Inspection of Reactor Coolant Pressure Boundary," Appendix A of 10 CFR Part 50 requires, in part, that components which are part of the reactor coolant pressure boundary be designed to permit periodic inspection and testing of important areas and features to assess their structural and leak-tight integrity. To ensure that no deleterious defects develop during service, selected welds and weld heat-affected-zones (HAZ) will be inspected periodically at Seabrook Station, Units 1 and 2. The design of the ASME Code Class 1 and 2 components of the reactor coolant pressure boundary incorporates provisions for access for inservice inspections, as required by Paragraph IWA-1500 of Section XI of the ASME Code. Section 50.55a (g), 10 CFR Part 50, defines the detailed requirements for the preservice and inservice inspection programs for light water cooled nuclear power facility components. Based upon the construction permit date of July 7, 1976, this section of the regulations requires that a preservice inspection program be developed and implemented using at least the Edition and Addenda of Section XI of the ASME Code applied to the construction of the particular component. Also, the initial ISI program must comply with the requirements of the latest Edition and Addenda of Section XI of the ASME Code in effect twelve months

prior to the date of issuance of the operating license, subject to the limitations and modifications listed in Section 50.55a (b) of 10 CFR Part 50.

5.2.4.3 Evaluation of Compliance with 10 CFR 50.55a(g)

We have reviewed the available information in the FSAR and find that the Preservice Inspection Program for Units 1 and 2 has not been submitted for review. We will complete our SER input on the Preservice Inspection Program based on Standard Review Plan 5.2.4 provided the complete document is submitted by July 7, 1982. The applicant states in the FSAR that all components of the reactor coolant pressure boundary are designed, fabricated and erected in such a way as to comply fully with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. We find this commitment acceptable and, therefore, do not anticipate evaluating Requests for Relief from impractical examination requirement. It should be emphasized that no other plant in the OL review has met this objective of full compliance with the ASME Code.

The initial inservice inspection program has not been submitted by the applicant. We will evaluate the program after the applicable ASME Code Edition and Addenda can be determined based on Section 50.55a (b) of 10 CFR Part 50, but before the first refueling outage when inservice inspection commences.

5.2.4.4 Conclusions

The conduct of periodic inspections and hydrostatic testing of pressure retaining components of the reactor coolant pressure boundary, in accordance with the requirements of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code and 10 CFR Part 50, will provide reasonable assurance that evidence of structural degradation or loss of leaktight integrity occurring during service will be detected in time to permit corrective action before the safety functions of a component are compromised.

Compliance with the preservice and inservice inspections required by the Code and 10 CFR Part 50 constitutes an acceptable basis for satisfying the inspection requirements of Criterion 32 of the General Design Criteria.

5.2.4.5 References

1. NUREG-0800, Standard Review Plans, Section 5.2.4, "Reactor Coolant Boundary Inservice Inspection and Testing," July 1981.
2. Code of Federal Regulations, Volume 10, Part 50.
3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI.

5.4.2.2 Steam Generator Tube Inservice Inspection

5.4.2.2.1 Compliance with the Standard Review Plans (SRP)

The July 1981 Edition of the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," (NUREG-0800) includes Section 5.4.2.2, "Steam Generator Tube Inservice Inspection." Units 1 and 2 was reviewed in accordance with this Section of SRP. However, our review will continue until the plant Technical Specifications governing steam generator tube examinations are completed and are in conformance with the applicable Standard Technical Specification.

5.4.2.2.2 Evaluation of the Inspection Program

General Design Criterion 32, "Inspection of Reactor Coolant Pressure Boundary," Appendix A of 10 CFR Part 50 requires, in part, that components which are part of the reactor coolant boundary be designed to permit periodic inspection and testing of important areas and features to assess their structural and leaktight integrity. The design of all pressure retaining parts of the steam generators at Seabrook Units 1 and 2 have been optionally upgraded to meet the ASME Boiler and Pressure Vessel Code requirements for ASME Code Class 1 components. Provisions also have been made to permit inservice inspection of the Class 1 and 2

components, including individual steam generator tubes. The applicant has committed to following the recommendations of Regulatory Guide 1.83, Revision 1, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes," and NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors," and comply with the requirements of Section XI of the ASME Code with respect to the inspection methods to be used. We find this commitment to be acceptable.

5.4.2.2.3 Conclusions

Conformance with Regulatory Guide 1.83, NUREG-0452, and the inspection requirements of Section XI of the ASME Code constitutes an acceptable basis for meeting, in part, the requirements of General Design Criterion 32.

5.4.2.2.3 References

1. NUREG-0800, Standard Review Plans, Section 5.2.4, "Reactor Coolant Boundary Inservice Inspection and Testing," Section 5.4.2.2, "Steam Generator Tube Inservice Inspection," and Section 5.6, "Inservice Inspection of Class 2 and 3 Components," July 1981.
2. Code of Federal Regulations, Volume 10, Part 50.
3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI.
4. Regulatory Guide 1.83, Revision 1, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes."
5. NUREG-0452, Revision 2, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors."

6.6 Inservice Inspection of Class 2 and 3 Components.

6.6.1 Compliance with the Standard Review Plan

The July 1981 Edition of the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," (SRP, NUREG-0800) includes Section 6.6, "Inservice Inspection of Class 2 and 3 Components." Our review is continuing because the applicant has not submitted the Preservice Inspection Program and has not completed all preservice examinations. Our review to date was conducted in accordance with Standard Review Plan Section 6.6 except as discussed below.

Paragraph II.4, "Acceptance Criteria, Inspection Intervals," has not been reviewed because this area applies only to Inservice Inspection (ISI) not to Preservice Inspection (PSI). This subject will be addressed during review of the ISI program after licensing.

Paragraph II.5, "Acceptance Criteria, Evaluation of Examination Results," has been reviewed and the applicant has stated in the FSAR that evaluation of Class 2 and 3 examination results will comply with requirements of IWC-3000 and IWD-3000, respectively, of Section XI.

However, ongoing NRC generic activities and research projects indicate that the presently specified ASME

Code procedures may not always be capable of detecting the maximum acceptable size flaws specified in those standards. For example, ASME Code procedures specified for volumetric examination of vessels, bores and studs, and piping have not proven to be capable of detecting maximum acceptable size flaw in all cases. We will continue to evaluate development of improved procedures and will require that these improved procedures be made a part of the inservice examination requirements. We have not reviewed the applicant's repair procedures based on ASME Code Articles IWC-4000 and IWD-4000, "Repair Procedures," because the applicant has not provided specific information. Repairs are not generally necessary in the PSI program. This subject will be addressed during our review of the ISI program. Paragraph II.7, "Acceptance Criteria, Augmented ISI to Protect Against Postulated Piping Failures," has not been completed because this subject has not yet been addressed in the applicant's PSI program. We will review the applicant's augmented ISI program after it is submitted.

Paragraph II.8. The applicant has not provided the complete listing of exemptions from Code examination requirements as permitted by IWC-1220. We will review

these exemptions as they are submitted in the PSI Program.

Paragraph II.9, "Acceptance Criteria, Relief Requests," has not been completed because the applicant has not identified the Limitaitons to examination.

6.6.2 Examination Requirements

General Design Criteria 36, 39, 42, and 45, Appendix A of 10 CFR Part 50 require, in part that the Class 2 and 3 components be designed to permit appropriate periodic inspection of important components to ensure system integrity and capability. Section 50.55a(g) of 10 CFR Part 50 defines the detailed requirements for the PSI programs for light water cooled nuclear power facility components.

Based upon the construction permit date of July 7, 1976, this section of the regulations requires that a PSI program for Class 2 and 3 components be developed and implemented using at least the Edition and Addenda of Section XI of the ASME Code applied to the construction of the particular component. Also, the initial inservice inspection program must comply with the requirements of the latest Edition and Addenda of Section XI of the ASME Code in effect twelve months prior to the date of issuance of the operating license, subject

to the limitations and modifications listed in Section 50.55a(b) of 10 CFR Part 50.

b.6.3 Evaluation of Compliance with 10 CFR 50.55a(g)

We have reviewed the available information in the FSAR and find that the Preservice Inspection Program for Units 1 and 2 has not been submitted for review. We will complete our SER input on the Preservice Inspection Program based on Standard Review Plan 6.6 provided the completed document is submitted by July 7, 1982. The applicant has not identified any limitations to examination. We will require that the applicant identify all areas where the preservice examination requirements of the applicable edition of Section XI can not be met and provide a supporting technical justification.

The initial inservice inspection program has not been submitted by the applicant. We will evaluate the program after the applicable ASME Code Edition and Addenda can be determined based on Section 50.55a(b) of 10 CFR Part 50, but before the first refueling outage when inservice inspection commences.

b.6.4 Conclusions

Compliance with the preservice and inservice inspections required by the American Society of Mechanical Engineers Code and 10 CFR Part 50 constitutes an acceptable basis for satisfying applicable requirements

of General Design Criteria 36, 39, 42, and 45.

6.6.5

References

1. NUREG-0800, Standard Review Plan, Section 6.6,
"Inservice Inspection of Class 2 and 3 Components,"
July 1981.
2. Code of Federal Regulations, Volume 10, Part 50.
3. American Society of Mechanical Engineers Boiler
and Pressure Vessel Code, Section XI.

ATTACHMENT 2

GUIDANCE FOR THE PREPARATION OF PSI
PROGRAM AND RELIEF REQUESTS
MATERIALS ENGINEERING BRANCH
INSERVICE INSPECTION SECTION

Review of the Preservice Inspection Program

250.1. Paragraph 50.55a(b) (2) (iv) of 10 CFR Part 50 requires that ASME Code Class 2 piping welds in the residual heat removal systems, emergency core coolant systems and containment heat removal systems shall be examined. The control of water chemistry to minimize stress corrosion described in Paragraph IWC-1220 (c) of Section XI is not an acceptable basis for exempting ECCS, RHR, and CHRS components from examination because practical evaluation, review and acceptance standards cannot be clearly defined. To satisfy the inspection requirements of General Design Criteria 36, 39, and 45, the preservice inspection program must include periodic volumetric and/or surface examination of a representative sample of welds in the RHR, ECCS and Containment Heat Removal Systems.

250.2. When using Appendix III of Section XI for preservice examination of either ferritic or austenitic piping welds, the following should be incorporated:

A. Any crack-like indication, 20 percent of DAC or greater, discovered during examination of piping welds or adjacent base metal materials should

to recorded and investigated by a Level II or Level III examiner to the extent necessary to determine the shape, identity, and location of the reflector.

- B. The Owner should evaluate and take corrective action for the disposition of any indication investigated and found to be other than geometrical or metallurgical in nature.

250.3. Your PSI program should address augmented ISI to protect against postulated piping failures in high energy fluid system piping. High-energy fluid system piping between containment isolation valve should receive an augmented ISI in accordance with NUREG-0800, Standard Review Plan, Section 6.6, Paragraphs I.7 and II.7. Your preservice and inservice inspection program should include these augmented examination provisions.

Request for Relief from Impractical ASME Code Requirements

- 250.4. Provide an approximate date when all relief requests will be submitted for evaluation. The PSI program plan should include the following information:
- A. For ASME Code Class 1 and 2 components, provide a table similar to IWB-2600 and IWC-2600 confirming that either the entire Section XI preservice examination was performed on the component or relief is requested with a technical justification supporting your conclusion.

- B. Where relief is requested for pressure retaining welds in the reactor vessel, identify the specific welds that did not receive a 100% preservice ultrasonic examination and estimate the extent of the examination that was performed.
- C. Where relief is requested for piping system welds (Examination Category B-1, C-F, and C-G), provide a list of specific welds that did not receive a complete Section XI preservice examination including a drawing or isometric identification number, system, weld number, and physical configuration; e.g., pipe to nozzle weld, etc. Estimate the extent of the preservice examination that was performed. When the volumetric examination was performed from one side of the weld, discuss whether the entire weld volume, and the heat affected zone (HAZ) and base metal on the far side of the weld were examined. State the primary reason that a specific examination is impractical; e.g., support or component restricts access, fitting prevents adequate ultrasonic coupling on one side, component-to-component weld prevents ultrasonic examination, etc. Indicate any alternative or supplemental examination performed and method(s) of fabrication examination.