UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 226 TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY

CENTERIOR SERVICE COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1.0 INTRODUCTION

By letter dated December 23, 1997, Toledo Edison Company, Centerior Service Company, and The Cleveland Electric Illuminating Company (the licensees), submitted a request for changes to the Davis-Besse Nuclear Power Station, Unit No. 1, Technical Specifications (TSs). TS Section 4.4.5, "Reactor Coolant System - Steam Generators - Surveillance Requirements (SRs)," would be modified. SR 4.4.5.8, which specifies the inspection requirements for the internal auxiliary feedwater header, header to shroud attachment welds, and external header thermal sleeves, would be changed. This change would require the inspections to be performed during the third period of each 10-year inservice inspection (ISI) interval. The present requirement is that the visual inspection be performed during the third and fourth refueling outages and "at the ten-year ISI." The proposed change is effective for the second, third, and fourth 10-year inspection intervals.

2.0 EVALUATION

The staff, with technical assistance from its contractor, the Idaho National Engineering and Environmental Laboratory (INEEL), has evaluated the information provided by the licensees in support of the proposed TS change regarding the secured internal auxiliary feedwater header, header-to-shroud attachment welds, and the external header thermal sleeves on each steam generator through the auxiliary feedwater injection penetrations at Davis-Besse. Based on the results of the review, the staff adopts the contractor's conclusions and recommendations presented in the Technical Letter Report (TLR, which is attached).

To comply with TS SR 4.4.5.8, the licensees must visually inspect the secured internal auxiliary feedwater header, header-to-shroud attachment welds, and the external header thermal sleeves on each steam generator through the auxiliary feedwater injection penetrations. The inspections are required to

be performed during the third and fourth refueling outage and at the 10-year ISI examination.

TS SR 4.4.5.8 currently states:

> Visual inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed on each steam generator through the auxiliary feedwater injection penetrations.
>
> These inspections shall be performed during the third and fourth refueling outages and at the ten-year ISI.

The licensees have proposed a change to the wording of the second paragraph, removing the underlined portions, and adding in new text (underlined) to state:

> These inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed during the third period of each ten-year Inservice Inspection Interval (ISI).

The licensees performed the visual inspections during the third and fourth refueling outages, as required, and again during the sixth refueling outage in conjunction with the first 10-year ISI. The first 10-year ISI was performed in January, 1990, which was near the end of the third period of the first 10-year interval. The licensees found no damage or degradation of the components during the three separate outage inspections.

Because the required third and fourth refueling outage visual inspections have been completed, the third and fourth outage requirements can be removed from the TS SR.

The remaining TS SR requirement, to perform the visual examination during the 10-year ISI, was satisfied for the first 10-year interval. The next 10-year ISI is scheduled for April 2000, which is in the third period of the second interval. The proposed change to the TS SR would require that the visual examination be performed as a 10-year interval requirement. Therefore, this would require the visual inspections to be performed in the third period of the second, third and fourth 10-year intervals.

The schedule for inspections proposed by the licensees is based on the requirements specified in the ASME Code, Section XI, IWC-2400, Inspection Schedule. IWC-2412 of the Code divides the 10-year inservice inspection interval into three inspection periods. IWB-2420(a) and IWC-2420(a) of the Code state that "the sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical." The proposed TS change will maintain a 10-year schedule for the visual inspections and also allow the licensees the flexibility to schedule the inspections during any outage in the third period of the inspection interval.

The staff has determined that the proposed change to TS SR 4.4.5.8, to include an inspection schedule equivalent to the ASME Section XI requirements for the visual inspections, and the continued use of TS SR 4.4.5.7, which includes eddy current examination of steam generator periphery tubing, provides reasonable assurance of structural integrity of the subject components. Therefore, the licensees' proposed change is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Ohio State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (63 FR 4327). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. McLellan

Date: September 2, 1998

TECHNICAL LETTER REPORT
ON TECHNICAL SPECIFICATION 3/4.4.5
SURVEILLANCE REQUIREMENT 4.4.5.8
FOR
TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1
DOCKET NUMBER: 50-346

1. INTRODUCTION

By letter dated December 23, 1997, the licensee, Toledo Edison Company, submitted an application for an amendment to the Davis-Besse Nuclear Power Station, Unit 1, Operating License Number NPF-3, Appendix A, Technical Specifications. The licensee is proposing to change Technical Specification (TS) Section 3/4.4.5, *Reactor Coolant System - Steam Generators*, Surveillance Requirement (SR) 4.4.5.8. It specifies the inspection requirements for the internal auxiliary feedwater header, header to shroud attachment welds, and external header thermal sleeves.

The proposed change will require the inspections to be performed during the third period of each 10-year ISI interval. The present requirement is that the visual inspection be performed during the third and fourth refueling outages and "at the ten-year ISI." The proposed change is effective for the second, third, and fourth 10-year inspection intervals. The Idaho National Engineering and Environmental Laboratory (INEEL) staff has evaluated the licensee's proposed Technical Specification change in the following section.

EVALUATION

The information provided by Toledo Edison Company in support of the proposed change to the Technical Specifications has been evaluated and the basis for disposition is documented below. The Code of record for the Davis-Besse Nuclear Power Station, Unit 1, second 10-year ISI interval, which began September 21, 1990, is the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

History:

As stated in an NRC SER dated September 20, 1982,

"While conducting inservice inspection of the No. 1 steam generator during a scheduled refueling outage, the licensee noted that some of the eddy current indications being obtained for the peripheral tubes appeared to correspond to the locations of the support pins which hold the internal auxiliary feedwater header to the steam shroud. Other indications were also obtained which corresponded to the approximate elevation of the auxiliary feedwater header. An access cover on the steam generator shell was removed to permit limited direct visual inspection of the auxiliary feedwater header. The header and some support brackets were observed to be severely distorted, although the header remained in its approximated position. Further limited inspection using a fiber optic device confirmed that the damage generally extended over the entire portion of the header accessible to the fiberscope, approximately a 160 degree segment of arc. Subsequent inspection of the No. 2 steam generator revealed similar damage."

The licensee selected a repair and modification program which included a modified system for auxiliary feedwater injection and deactivation of the existing auxiliary feedwater header, leaving the retired header in place. The retired header was securely fastened to the steam shroud to prevent subsequent damage to the steam generator tubing.

The Commission issued Amendment No. 62 to the Facility Operating License NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1 to include the following requirements:

"4.4.5.7 When the steam generator tube inspection is performed as per Section 4.4.5.2, an additional but totally separate inspection shall be performed on special interest peripheral tubes in the vicinity of the secured internal auxiliary feedwater header. This testing shall only be required on the steam generator selected for inspection, and the test shall require inspection only between the upper tube sheet and the 15th tube support plate. The tubes selected for inspection shall represent the entire circumference of the steam generator and shall total at least 150 peripheral tubes.

"4.4.5.8 Visual inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed on each steam generator through the auxiliary feedwater injection penetrations.

"These inspections shall be performed during the third and fourth refueling outages and at the ten-year ISI."

Licensee's Proposed Change (as stated):

"The purpose of the proposed change is to modify the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1, Operating License NPF-3, Appendix A Technical Specification. This License Amendment Request (LAR) proposes that TS 3/4/4/5, Reactor Coolant System - Steam Generators, Surveillance Requirement (SR) 4.4.5.8 (see attached marked-up Technical Specifications)[1] be revised to state: 'These inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed during the third period of each ten-year Inservice Inspection (ISI) Interval.' The present SR wording specifies that the visual inspections be performed during the third and fourth refueling outages and 'at the ten-year ISI'."

Licensee's Basis for the Proposed Change (as stated):

"The proposed revision of TS SR 4.4.5.8 would allow the visual inspection of the secured internal auxiliary feedwater header, header to shroud attachment welds, and external header thermal sleeves to be performed during any refueling outage that falls in the third period of the ten-year inservice inspection interval (see attached figure). Under the current TS SR 4.4.5.8, the visual inspections in both Steam Generators must be completed during the refueling at the ten-year ISI, which is normally defined as the outage when the reactor is disassembled for the examination of the reactor vessel welds. The next such outage at the DBNPS will be the 12RFO, scheduled for the year 2000.

"The NRC SER for Amendment Number 62 (TE Log Number 1376 dated September 30, 1983) stated that inservice inspections would be performed during each ten-year Inservice Inspection interval to confirm that no deterioration had occurred. Although the visual inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves are not Code examinations, Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code can be consulted for scheduling guidance for SR 4.4.5.8 since its performance is tied by TS to the Inservice Inspection interval. Article IWC-2412, Inspection Program B, divides the ten-year Inservice Inspection interval into three inspection periods. Article IWC-2420(a), Successive Inspections, requires that the sequence of component examinations established in the first 10-year inspection interval be repeated during each subsequent ten-year inspection interval to the extent practical.

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[1] Attachments and figures provided by the licensee are not included with this evaluation.

"Since the visual inspection of these components was performed during the third period of the first ten-year Inservice Inspection interval, it is appropriate that the subsequent inspections be performed during the third period of each subsequent ten-year Inservice Inspection interval.

"This proposed change will allow the visual inspection to be performed any time within the third period of the second ISI interval, thus allowing added flexibility in performing the inspections. Under the proposed change, the required visual inspections will be performed again in the third period of the third and fourth ten-year ISI intervals.

"No damage or degradation was found during the visual inspections of these components during the third refueling outage, fourth refueling outage or first ten-year ISI.

"Since, under the proposed change, the required inspections will continue to be performed on a regular basis, which is determined by the method accepted for scheduling inspections of ASME Code Section XI components, there will be no adverse effect on plant safety.

"The proposed revision of TS SR 4.4.5.8 also removes the obsolete statement referring to the performance of the inspections which were completed during the third and fourth refueling outages. This is an administrative change and will have no adverse effect on plant safety."

Evaluation: To comply with TS SR 4.4.5.8, the licensee must visually inspect the secured internal auxiliary feedwater header, header-to-shroud attachment welds, and the external header thermal sleeves on each steam generator through the auxiliary feedwater injection penetrations. The inspections are required to be performed during the third and fourth refueling outage and at the 10-year ISI examination.

The licensee has proposed a change to the wording in TS SR 4.4.5.8 to state:

"Visual inspections of the secured internal feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed on each steam generator through the auxiliary feedwater injection penetrations.

"These inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves shall be performed during the third period of each ten-year Inservice Inspection Interval (ISI)."

The licensee performed the visual inspections during the third and fourth refueling outages, as required, and again during the sixth refueling outage in conjunction with

the first 10-year ISI. The first 10-year ISI was performed in January, 1990, which was near the end of the third period of the first 10-year interval. The licensee found no damage or degradation of the components during the three separate outage inspections.

Because the required third and fourth refueling outage visual inspections have been completed, the third and fourth outage requirements can be removed from the TS SR.

The remaining TS SR requirement, to perform the visual examination during the 10-year ISI, was satisfied for the first 10-year interval. The next 10-year ISI is scheduled for April, 2000, which is in the third period of the second interval. The proposed change to the TS SR would require that the visual examination be performed as a 10-year interval requirement. Therefore, this would require the visual inspections to be performed in the third period of the second, third and fourth 10-year intervals.

The schedule for inspections proposed by the licensee is based on the requirements specified in ASME XI, IWC-2400, Inspection Schedule. IWC-2412 of the Code divides the 10-year inservice inspection interval into three inspection periods. IWB-2420(a), and IWC-2420(a) of the Code state that "the sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical." The proposed TS change will maintain a 10-year schedule for the visual inspections and also allow the licensee the flexibility to schedule the inspections during any outage in the third period of the inspection interval.

The INEEL staff believes that the proposed change to TS SR 4.4.5.8, to include an inspection schedule equivalent to the ASME Section XI requirements for the visual inspections, and the continued use of TS SR 4.4.5.7, which includes eddy current examination of steam generator periphery tubing, will continue to provide reasonable assurance that the structural integrity of the subject components is maintained.

CONCLUSION

For the Davis-Besse Nuclear Power Station, visual inspection of the secured internal auxiliary feedwater header, header to shroud attachment welds, and external header thermal sleeves during the third period of each ten-year Inservice Inspection Interval, in combination with the requirements of TS SR 4.4.5.7, will continue to provide reasonable assurance of the structural integrity of these components. Therefore, it is recommended that the proposed change to TS SR 4.4.5.8 be approved.