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2CAN119406

U. S. Nuclear Regulatory Commission
Document Control Desk
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Washington, DC 20555

Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Technical Specification Change Request
Special Steam Generator Tube Inspections

Gentlemen:

Attached for your review and approval is a proposed technical specification change adding a note to Surveillance Requirement 4.4.5.0 which clarifies requirements for special steam generator inspections not performed as part of the augmented inservice inspection described in the surveillance requirements of Specification 3.4.5. Four other minor administrative changes to the surveillance requirements for Specification 3.4.5 and their bases are included to correct inconsistencies created from past technical specification amendments.

The clarification added to Surveillance Requirement 4.4.5.0 excludes special steam generator tube inspections from the Surveillance Requirements of Specification 3.4.5. Special steam generator tube inspections are inspections that cannot be credited to satisfy all of the existing augmented inspection requirements, or for which fulfilling the existing requirements would not provide an increase in the confidence of tube integrity commensurate with dose or cost associated with the inspection. Special inspections could include those conducted at frequencies shorter than those specified in the technical specifications, inspections with defined scopes for examinations of a specific area of interest, inspections conducted when administratively shut down for a primary-to-secondary leak less than the technical specifications limit, etc. For special steam generator tube inspections, scope and expansion criteria sufficient to meet the requirements of General Design Criterion 14 of Appendix A to 10CFR50 and the guidance of Regulatory Guide 1.121 will be developed, reviewed by the Plant Safety Commitee, and submitted to the NRC.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1) using criteria in 10CFR50.92(c) and it has been determined that this change involves no significant hazards considerations. The bases for these determinations are included in the attached submittal.

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Although the circumstances of this request are neither emergency nor exigent, prompt review and approval of this proposed amendment is requested prior to the beginning of the midcycle outage which is currently scheduled to begin on January 6, 1995. We request that the license amendment be effective upon issuance.

Very truly yours,

Jerry W Yelverton

JWY/jjd
Attachments

To the best of my knowledge and belief, the statements contained in this submittal are true.

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for Logan **County and the State of Arkansas, this** 29th **day of** November **, 1994.**

Sandy Siebenmorgen
Notary Public
My Commission Expires May 14, 2000

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ATTACHMENT

TO

2CAN119406

PROPOSED TECHNICAL SPECIFICATION

AND

RESPECTIVE SAFETY ANALYSES

IN THE MATTER OF AMENDING

LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT TWO

DOCKET NO. 50-368

DESCRIPTION OF PROPOSED CHANGES

The proposed changes revise the Arkansas Nuclear One - Unit 2 (ANO-2) Technical Specifications (TS) as follows:

1. A note has been added after Surveillance Requirement 4.4.5.0 which adds review and reporting requirements for special steam generator (SG) inspections not specifically included in the augmented inservice inspection program described in the surveillance requirements for Specification 3.4.5. A clarification has been included that the surveillance requirements of Specification 3.4.5 do not apply to these special SG inspections.

2. The scope, expansion criteria and results of special steam generator inspections are added to the list of items required to be reviewed by the Plant Safety Committee (6.5.1.7.n).

3. The scope, expansion criteria and results of special steam generator inspections are added to the list of special reports to be submitted to the NRC (6.9.2.p).

4. Appropriate wording describing the reason for the exemption from specific requirements in the TSs for special SG inspections is added to Bases 3/4.4.5.

5. The reference to the definition of tube inspection included in Surveillance Requirement 4.4.5.2.b.3 has been corrected to properly reference Surveillance Requirement 4.4.5.4.a.9.

6. The one-time exemption included as Footnote 1 to Table 4.4-2 has been deleted.

7. A misspelled word in Table 4.4-2 has been corrected.

8. An inconsistency in Bases 3/4.4.5 has been corrected to allow an unserviceable tube to be either plugged or repaired.

BACKGROUND

Since the development and addition of the essentially generic augmented SG inservice inspection requirements in the TSs based upon Regulatory Guide 1.83, new degradation mechanisms and specific areas of concern in the SGs have become more prominent which require inspection programs that supplement the TS requirements. Additionally, new detection equipment and techniques, e.g., ultrasonics, have become available which would not satisfy the literal TS defined scope for a SG inservice inspection. Areas for which special SG tube inspections are currently being conducted in the nuclear industry are described below:

1. Inspection Frequency

Surveillance Requirement 4.4.5.3.a requires inservice inspections to be performed at intervals not less than 12 months after the previous inspection. The next ANO-2 midcycle outage for a special steam generator inspection is scheduled to start January 6, 1995. This is approximately nine months after the last inservice inspection conducted during refueling outage 2R10 and, therefore, is considered a special inspection since it cannot be credited as an inservice inspection.

ANO-2 has an administrative leak rate limit to shutdown for primary-to-secondary leakage ≥ 0.1 GPM in either SG. Surveillance Requirement 4.4.5.3.c.1 only requires an inservice inspection if the reactor is shutdown for primary-to-secondary tube leaks ≥ 0.5 GPM per SG, the limits of Specification 3.4.6.2. Therefore, the surveillance requirement for an unscheduled inservice inspection would not apply for a shutdown caused by exceeding any administrative leakage limit more conservative than the TS limit.

2. Inspection Scope

Surveillance Requirement 4.4.5.2.b.3 requires the first sample of tubes selected for each inservice inspection to be inspected full length. This requirement is not appropriate for special inspections such as the ANO-2 inspection to be conducted during the next planned midcycle outage (2P95-1), since the specific area of interest has already been determined based on previous inspection history to include only a small portion of the tube length (the top of the hot leg tubesheet.)

In the case of an inspection due to an administrative shutdown caused by a primary-to-secondary leak less than the TS leak rate limit, the appropriate scope for an inspection should be determined from an initial determination of the defect type and location that caused the leak, previous history of that defect and defect type, etc. A required TS inspection of the full length of 6% of the tubes in the leaking generator (from Table 4.4-2) may not be an adequate scope to determine the operability of the generator, or it may be far greater than necessary. The scope should not be generic, but should be based on the plant specific conditions that led to the leakage.

3. Expansion Criteria

Table 4.4-2 includes required expansions of the SG inspection based upon the results of the previous sample inspected. For example, if the first sample inspected resulted in one tube being plugged or repaired, an additional 6% of the tubes in that generator, assuming a one steam generator inspection, would need to be inspected. If more than 1% of the tubes needed to be plugged or repaired, all the tubes in the SG would need to be inspected as well as 12% in the second SG. If the same expansion criteria were applied to the 2P95-1 inspection, which has an initial scope of approximately 5000 tubes (100% of the tubes in the area of interest) in the "A" SG, based on repairing greater than 1% of the tubes from the initial inspection, about 3000 tubes would

additionally have to be inspected in areas of the SG where circumferential cracking has not been previously observed. This expansion criteria would also require an initial expansion to the "B" SG of approximately 1000 tubes, even though Entergy Operations has already determined, with a 95% confidence, that no circumferential crack would grow beyond the calculated Regulatory Guide 1.121 limit of 79% average throughwall by the end of cycle. The 2P95-1 special inspection scope, projections of the number and size of anticipated cracks, and calculation of changes in core damage frequency (CDF) due to the anticipated cracks were previously presented to the NRC staff in a meeting on July 14, 1994.

The augmented inservice inspection requirements included in the TSs also include requirements for random selection of tubes for inspections, with several exceptions. In a typical midcycle inspection, the first sample includes every tube in the area of interest. In this scenario, if any tubes require plugging, the expansion would include a random selection of tubes which would not be in areas of the steam generator where the specific defect mechanism has been previously observed. In this situation the required expansion would not be likely to yield an increased confidence in the integrity of the SG tubes commensurate with the increased cost of inspection and additional dose received by inspecting the extra tubes.

Another situation where the current expansion criteria included in the TSs are not appropriate occurs during an outage when both a full length tube inspection per the TSs and a special inspection in an area of interest (e.g., MRPC at the top of the tubesheet) are being conducted. In this situation, the number of tubes being plugged or repaired from the full length tube inspection should not be added to the number of tubes plugged or repaired due to the special inspection to determine the need for, or scope of any supplemental inspection samples. The number of tubes plugged or repaired for axial cracks greater than 40% throughwall at the tube support plates have no direct relationship to tubes plugged or repaired due to circumferential cracks near the tubesheet, and should not cause an increase in the scope of the MRPC inspection. Likewise, the number of tubes plugged or repaired due to circumferential cracks found during the special inspection at the tubesheet should not cause an increase in the scope of the full length bobbin coil inspection since there is no direct relationship between the two defect phenomena.

The expansion criteria of Table 4.4-2 should also not apply to special inspections caused by leakage less than the TS limit. Any expansions should be based on plant specific criteria for the same reasons as described above in the discussion of appropriate scope for such an inspection.

4. Detection Equipment

Specification 4.4.5.2.b.3 implies that the first sample of tubes in an inspection be examined utilizing an eddy current probe. This means that other detection equipment (e.g., ultrasonics which may provide more accurate location and sizing of flaws) may be used only in addition to an eddy current probe.

DISCUSSION OF CHANGE

Special Steam Generator Inspections

The proposed change to Surveillance Requirement 4.4.5.0 will resolve the problems described above with compliance to TSs during special inspections by specifying that the TS augmented inservice program does not apply to special steam generator inspections. Development of the appropriate scope and expansion criteria for a special inspection will be completed by Entergy Operations on a case-by-case basis. A new requirement has also been added to Surveillance Requirement 4.4.5.0 for the Plant Safety Committee (PSC) to review the scope, expansion criteria, and results of special inspections prior to resumption of plant operations and to provide a report to the NRC within 30 days of resumption of plant operation. Typically, the PSC review would assure the adequacy of the inspection considering previously identified damage mechanisms and any newly identified phenomena.

By specifying that augmented inspection requirements do not apply to special steam generator inspections, the responsibility for developing an inspection scope and expansion criteria that will ensure the requirements of General Design Criterion 14, "Reactor Coolant Pressure Boundary," of Appendix A to 10CFR50 are met rests with Entergy Operations. The NRC will have an opportunity to review decisions made with respect to special inspections through the new reporting requirement and through onsite inspections of the steam generator inspection program.

Discussed below are other administrative changes to the TSs which correct inconsistencies created from past technical specification amendments.

Correction to Reference

On March 30, 1992 Entergy Operations submitted an exigent technical specification change request (2CAN039204) to utilize Babcock and Wilcox (B&W) kinetic steam generator tube sleeves in the ANO-2 steam generators. This technical specification change request added a new definition, "Tubing or Tube," as Surveillance Requirement 4.4.5.4.a.1 and renumbered the other existing definitions in Surveillance Requirement 4.4.5.4. However, a reference in Surveillance Requirement 4.4.5.2.b.3 to the definition of tube inspection included in Surveillance Requirement 4.4.5.4.8 (renumbered as 4.4.5.4.9) was not identified. This error was subsequently included in TS Amendment 133 issued on April 22, 1992 (2CNA049203). The error is corrected in the proposed change.

Deletion of Footnote

ANO-2 TS Amendment 143, dated February 23, 1993 (2CNA029302), added a note to Table 4.4-2 of the TSs granting a one-time exemption to the C-3 inspection requirements for the inspection conducted during the ninth refueling outage (2R9) of "B" steam generator tubes 38-66 and 37-67 for the period of November 27, 1992 through May 30, 1993. Inspection of these two tubes was not completed as part of the 100% C-3 sample inspection performed during 2R9 (see Entergy Operations' letter dated November 27, 1992 [2CAN119205]). The

inspection of these tubes was completed during the planned outage conducted in May 1993 (2P93-1). The results of this inspection were included in a letter to the NRC dated June 17, 1993 (2CAN069302). Since the permitted interval for the exemption has expired, the footnote is no longer necessary and has been deleted in the proposed change.

Spelling Correction

On December 22, 1992 Entergy Operations submitted a TS change request (2CAN129203) to add a footnote to Table 4.4-2 (see above). The proposed revision to the table included the misspelled word "minimum" in the description of the sample size for the first sample. This misspelled word was subsequently included in TS Amendment 143 when it was issued. The correct spelling has been included in the proposed change.

Bases Correction

As part of the exigent technical specification change request discussed above for the reference correction, changes were made to Bases 3/4.4.5 to discuss sleeving of steam generator tubes. However, one sentence in the bases discussing shutdowns caused by leakage in excess of TS limits was not modified to permit sleeving in addition to tube plugging. This inconsistency in the bases has existed since TS Amendment 133 was issued. The inconsistency is corrected in the proposed change by revising the applicable sentence to allow tube repair in addition to plugging.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

An evaluation of the proposed change has been performed in accordance with 10CFR50.91(a)(1) regarding no significant hazards considerations using the standards in 10CFR50.92(c). A discussion of these standards as they relate to this amendment request follows:

Criterion 1 - Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.

This change has no actual impact on any previously analyzed accident in the final safety analysis report (FSAR). A double-ended break of one steam generator tube is postulated as part of the ANO-2 design basis accident evaluation. The change permits Entergy Operations to determine the appropriate scope and expansion criteria for special steam generator tube inspections that are beyond the scope of the augmented inservice inspection program included in the TSs. The augmented inservice inspection program contained in the TSs is not being modified.

General Design Criterion 14 of Appendix A of 10CFR50 states: "The reactor coolant pressure boundary shall be ... tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture." The proper scope and expansion criteria for special steam generator tube inspections is determined such that the requirement of the general design criterion will be met. Additionally, special inspections utilize calculations of

minimum acceptable wall thickness per the guidance of Regulatory Guide 1.121, "Basis for Plugging Degraded Steam Generator Tubes."

This change does not modify any parameter that will increase radioactivity in the primary system or increase the amount of radioactive steam released from the secondary safety valves or atmospheric dump valves in the event of a tube rupture.

The administrative corrections made to correct inconsistencies introduced in previous TS amendments do not affect reactor operations or accident analyses and have no radiological consequences.

Therefore, this change does not involve a significant increase in the probability or consequences of any accident previously evaluated.

Criterion 2 - Does Not Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated.

The scope of this change does not establish a potential new accident precursor. The design basis accident analyses for ANO-2 include the consequences of a double-ended break of one steam generator tube which bounds other postulated failure mechanisms. The proposed change would permit determination of alternate inspection criteria for special inspections which are in addition to the inservice inspections required by the TSs. The equipment used in special inspections would not affect any plant components differently than those used for TS required inspections.

The corrections made to remove inconsistencies introduced in previous TS amendments are administrative and do not change the design, configuration, or method of operation of the plant.

Therefore, this change does not create the possibility of a new or different kind of accident from any previously evaluated.

Criterion 3 - Does Not Involve a Significant Reduction in the Margin of Safety.

As previously stated, a double-ended rupture of one steam generator tube is accounted for in the ANO-2 design basis accident analysis. Safety margins to detect and repair tube defects prior to rupture are reflected by the 0.5 GPM primary-to-secondary leakage limit stated in the ANO-2 TSs and the minimum acceptable wall thickness criteria included in Regulatory Guide 1.121. As stated in the ANO-2 TS Bases, cracks having a primary-to-secondary leakage less than the 0.5 GPM limit during operation will have an adequate margin of safety to withstand the loads imposed during normal operation and by postulated accidents. Considering that special inspections are in addition to the inservice inspection program defined in the ANO-2 TSs, that the scope of special inspections are determined taking into consideration General Design Criterion 14, and that leakage detection capability is not being modified, the exemption of special inspections from the requirements of the augmented inservice inspection program does not significantly reduce the margin of safety.

The other administrative changes do not reduce TS operability and surveillance requirements, and therefore, do not reduce any margin of safety.

Therefore, this change does not involve a significant reduction in the margin of safety.

Based upon the reasoning presented above and the previous discussion of the amendment request, Entergy Operations has determined that the requested change does not involve a significant hazards consideration.