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SUBJECT: Application for amends to Licenses NPF-10 & NPF-15, revising
 Tech Spec Surveillance Requirement 4.4.4.4 to increase
 acceptance criteria for steam generator tube thinning to 44%
 in tube Rows 92-147. Fee encl.

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June 29, 1984

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Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Enclosed for your review and approval is a proposed change to Technical Specification 3/4.4.4 "Steam Generators" of the San Onofre Nuclear Generating Station, Units 2 and 3 Operating Licenses NPF-10 and NPF-15, respectively. The proposed change revises Surveillance Requirement 4.4.4.4, to increase the acceptance criteria for steam generator tube thinning to 44% in tube rows 92 through 147. A stress analysis of the steam generator tubes, performed in accordance with Regulatory Guide 1.121, substantiates the acceptability of the revised criteria.

Approval of the proposed change is desired by October 1, 1984 to alleviate the potential for unnecessary tube plugging during the Unit 2 refueling outage as a result the existing conservative criteria. SCE will be available to assist the NRC staff in resolving comments regarding the proposed change.

In accordance with 10 CFR 170.12, an amendment application fee of \$150 for Unit 2 and \$150 for Unit 3 is associated with the subject proposed change; a check for \$300 corresponding to the above is enclosed. Formal request for amendments to Operating Licenses NPF-10 and NPF-15 will be submitted by August 1, 1984.

If you have any questions concerning the enclosed information, please call me.

Very truly yours,

M.O. Medford

Enclosure

cc: Harry Rood, NRC (to be opened by addressee only)
Joseph O. Ward, California Department of Health Services
A. E. Chaffee, NRC Resident Inspector

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DESCRIPTION OF PROPOSED CHANGES NPF-10-141 AND NPF-15-141
AND SAFETY ANALYSIS

This is a request to revise Section 4.4.4.4 (steam generator) Acceptance Criteria of the Technical Specifications for San Onofre Nuclear Generating Station Units 2 and 3.

Description

Technical Specification 3/4.4.4 requires steam generator operability and specifies Surveillance Requirements to verify steam generator integrity. the current acceptable level of steam generator tube wall thinning shown in Figure 4.4.1, is 44% for tube rows 0 through 92 and decreases linearly to 26% in tube row 147. The proposed change will delete Figure 4.4.1 and specify a tube thinning limit of 44% for all steam generator tubes.

The original analysis established the structural adequacy of the San Onofre Units 2 and 3 steam generator tubes and tube supports, when subjected to various hypothetical accident conditions. It was determined that the limiting event was a combination of a Loss of Coolant Accident (LOCA) and Safe Shutdown Earthquake (SSE). The calculated stresses occurring in the steam generator tube walls as a result of the limiting event were compared to the maximum allowable stresses as defined by the NRC staff's criteria (Regulatory Guide 1.121, Bases for Plugging Degraded PWR Steam Generator Tubes). The analysis indicated that degradation of up to 64 percent is acceptable for both the straight portion of all tubes and the "U" bend region for the majority of tube rows. The outer tube rows experienced significant stress in the "U" tube bend region, due to the combination of hydraulic loads associated with blowdown of the primary system as a result of the LOCA and earthquake-induced accelerations resulting from the SSE. Thus in the outer tube bundle bend regions, the allowable degradation decreased linearly from 64 percent to a minimum of 46 percent at the outermost row.

The proposed change will remove excessive conservatism from the assumptions used in the original analysis and thereby establish a more accurate steam generator tube thinning limit. In addition, the proposed change prevents unnecessary (1) plugging of tubes, (2) associated high personnel radiation exposure and (3) decreases in the steam generator heat transfer surface area.

The revised analysis of the limiting LOCA/SSE scenario credits the frictional or binding restraint on the tubes provided by the vertical tube supports in the horizontal tube run on top of the "U" tube span; this was previously neglected in the original calculations. In addition, the LOCA and SSE peak loads were combined by square-root-of-the-sum-of-the-squares (SRSS) combination; these loads were added in the original calculations. The combination of a LOCA and SSE is still the limiting event. The revised analysis shows that tube degradation of up to 64 percent is acceptable for all steam generator tubes in meeting the criteria of Regulatory Guide 1.121.

In establishing the Technical Specification limits for San Onofre Units 2 and 3, the NRC imposed a 20 percent reduction in the above allowable degradation to cover Eddy Current Testing (ECT) measurement error and continued degradation through the next fuel cycle (in response to guidance provided in Regulatory Guide 1.121). As a result, a steam generator tube degradation limit of 44 percent for all steam generator tubes is proposed.

Existing Technical Specifications

Unit 2

See Attachment A

Unit 3

See Attachment B

Proposed Technical Specifications

Unit 2

See Attachment C

Unit 3

See Attachment D

Safety Analysis

The proposed changes discussed above shall be deemed to constitute a significant hazards consideration if there is a positive finding in any of the following areas.

1. Will operation of the facility in accordance with the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed Steam generator tube wall thinning acceptance criteria has been determined in accordance with Regulatory Guide 1.121. This criteria has been established to provide reasonable assurance that tube failure will not occur during operation of the plant; particularly during a LOCA, SSE or Main Steam Line Break. Removal of excessive conservatism from the steam generator tube stress analysis does not violate the Regulatory Guide 1.121 criteria and will not produce conditions which could lead to steam generator tube rupture under the most limiting design basis accident conditions.

2. Will operation of the facility in accordance with the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change does not change the configuration of the plant or the way in which it is operated. Therefore, the change does not create the possibility for a new or different kind of accident from any previously evaluated.

3. Will operation of the facility in accordance with the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed change affects the tube wall thinning acceptance criteria for tube rows beyond row 92. The supporting steam generator tube stress analysis meets the criteria of Regulatory Guide 1.121. Therefore the proposed change does not result in a significant reduction of a margin of safety.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples of amendments (48 FR 14870) that are considered not likely to involve significant hazards considerations. Example (vi) relates to a change which either may result in some increase in the probability or consequences of a previously-analyzed accident or may in some way reduce a safety margin, but where the results of the proposed change are clearly within all acceptance criteria for the system or component specified in the Standard Review Plan (SRP). Section 5.4.2.2 of the SRP references Regulatory Guide 1.83 which specifies inservice inspection criteria for determining steam generator operability. The proposed change prescribes steam generator tube thinning criteria which was developed in accordance with Regulatory Guide 1.83 and the SRP.

Safety and Significant Hazards Determination

Based on the above discussion, the proposed change does not involve a significant hazards consideration in that it does not: (1) involve a significant increase in the probability or consequences of any accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) involve a significant reduction in a margin of safety. In addition, it is concluded that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

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