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SUBJECT: Provides info re 870407 Amend 97 to License DPR-13 in response to 861111 Amend Application 138, consisting of Proposed Change 165 to Tech Specs. Amend lowers pressurizer high level reactor trip set point from 27.3 to 20.8 ft.

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April 30, 1987

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U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20055

Gentlemen:

Subject: Docket No. 50-206  
Amendment No. 97  
San Onofre Nuclear Generating Station  
Unit 1

By letter dated April 7, 1987 the NRC issued Amendment No. 97 to Provisional Operating License No. DPR-13 for San Onofre Unit 1. This amendment was issued in response to Amendment Application No. 138 submitted on November 11, 1986 consisting of Proposed Change No. 165 to the Technical Specifications. The amendment lowers the pressurizer high level reactor trip set point from 27.3 feet (70%) to 20.8 feet (50%) above the bottom of the pressurizer. The reduced pressurizer level trip setpoint was required to provide backup protection if the steam/feedwater flow mismatch trip was assumed as the arbitrary single failure for the Loss of Main Feedwater Transient.

In addition to the Loss of Main Feedwater Transient, the single failure of the steam/feedwater flow mismatch trip affected another transient, not part of the original San Onofre Unit 1 design basis, which has been analyzed in the past to determine plant behavior and auxiliary feedwater system capabilities. This transient was the Main Feedline Break. The backup trip assumed in this case was variable low pressure trip which provided reactor trip at approximately 14 seconds after the break. This reactor trip assumption did not take credit for the fact that a high containment pressure safety injection signal would trip the reactor at 2 psig and would occur prior to 14 seconds. This condition occurs for feedline breaks inside containment. Due to the addition of the new feedwater line check valves which were installed during the last refueling outage, as close to the steam generators as practical, feedline breaks which depressurize the steam generators can only occur inside containment. The transient modeled in the submittal of Proposed Change No. 165 did not take credit for this new design.

As part of the efforts which are underway to convert the existing dedicated auxiliary feedwater pump into a third emergency feedwater pump and to provide an auxiliary feedwater system which meets single failure criteria for all events, all previously analyzed transients were reviewed to determine whether the proposed design meets the new criteria. As part of this review

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the transients submitted with Proposed Change No. 165 were also re-evaluated with these criteria in mind. As a result of this re-evaluation, a modeling error was discovered in the way that Westinghouse determined the time of reactor trip on variable low pressure. The trip was assumed to occur when the setpoint was reached in the affected loop. In fact, due to the San Onofre Unit 1 design, a variable low pressure trip will occur only when a second loop reaches the setpoint since the logic is 2 out of 3 loops to trip. The trip on variable low pressure would therefore occur later than 14 seconds if the steam/feedwater flow mismatch trip were assumed to fail and other trips including the high containment trip were neglected. An excessive delay in reactor trip initiation in conjunction with a main feedline break inside containment could result in failure to meet acceptance criteria.

In view of the above, the feedline break transient has been reviewed based on reactor trip from the high containment pressure safety injection signal which would be generated from the safety related, qualified and single failure proof safety injection actuation system. A conservative calculation has been made which indicates that the high containment pressure safety injection signal would cause a reactor trip in less than 6 seconds. The analysis submitted with Proposed Change No. 165 which assumed a 14 second trip therefore remains bounding.

As an additional effort to demonstrate margin to the acceptance criteria the Feedline Break Event provided in Proposed Change No. 165 was re-analyzed assuming a delayed trip beyond 14 seconds. This re-analysis has shown that if reactor trip was arbitrarily delayed up to as much as 44 seconds, the acceptance criteria for this event would be met.

The use of the high containment pressure trip for feedline breaks downstream of the in-containment check valves also requires that a new analysis be performed for the feedline break upstream of these check valves. This case was analyzed assuming the initiation of 250 gpm of auxiliary feedwater at 15 minutes. The transient response of the system for this case is similar to that of the Loss of Main Feedwater Transient provided in Proposed Change No. 165. Reactor trip occurs on high pressurizer level (50% setpoint) at 75 seconds and the acceptance criteria for feedline break transients are met.

It should be noted that in the interest of providing this information in a timely manner, the analyses summarized in this letter are provided though they are now in the process of QA verification. If you have any questions or desire additional information, please contact me.

Very truly yours,



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