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March 30, 1993

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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **Docket Nos. 50-361 and 50-362**
Steam Generator Overfill Protection System (TAC Nos.M74994/5)
San Onofre Nuclear Generating Station
Units 2 and 3

References: See Enclosure

As previously discussed with the NRC Project Manager for San Onofre Units 2 and 3, this letter is to withdraw the commitments Southern California Edison (SCE) made in references 1 and 2 to install a Steam Generator Overfill Protection System (SGOPS) at San Onofre Units 2 and 3.

Based on our review of Generic Letter 89-19, "Safety Implications of Control Systems in LWR Nuclear Power Plants," as stated in reference 3, SCE had determined that detailed design studies and safety assessments must be completed before a decision could be made on implementation of a SGOPS at San Onofre Units 2 and 3. In addition, we stated that, as part of our Individual Plant Examination (IPE) in response to Generic Letter 88-20, steam generator overfill events and the safety impact of implementing appropriate plant specific SGOPS modifications would be evaluated. However, in response to reference 4, SCE planned to install a system to automatically close the Feedwater Isolation Valves (FWIVs).

SCE believed that automatic closure of the FWIVs was preferable to tripping the main feedwater pumps because flow to the unaffected steam generator could be maintained, which provided for a means of decay heat removal.

While SCE had been planning to install a SGOPS, we also have been following the meetings and correspondence between the NRC and the Combustion Engineering Owners Group (CEOG). The CEOG presented information to the NRC which proposed and justified alternatives to installing a SGOPS. Reference 5 documents the CEOG position and focuses on the following:

- Operator Failure Probability: Operator failure probability will be reduced by effective training and approved procedures.

  The CEOG position is that the operator failure probability to mitigate overfill is closer to 0.01 rather than a probability of 0.1 as stated in NUREG/CR-3958. The CEOG position is applicable at San Onofre because operator action to close the feedwater isolation

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valves is a memorized and frequently trained post-trip action at San Onofre. Based on simulator observations at San Onofre, in the event of a stuck open feedwater regulator valve, isolation was performed without approaching overfill.

- Steam Generator Tube Rupture (SGTR) Probability: The final version of NUREG-0844 reduced the probability of rupturing greater than 10 tubes by nearly an order of magnitude, resulting in the core-melt probability decreasing by the same proportion.

  The use of updated conditional failure probabilities in NUREG-0844 are considered generic based on their statistical derivation from past SGTR incidents. Therefore, they are applicable for San Onofre.

- Main Steam Line Break (MSLB) Location: The CEOG argued for a reduced probability of an unisolable MSLB due to the ratio of pipe outside containment [between the containment and the Main Steam Isolation Valves (MSIVs)] to the total pipe length (from the steam generators to the MSIVs). Branch piping is not included in calculating this ratio.

  Using the CEOG method, the ratio of outside containment to total main steam pipe length at San Onofre Units 2 and 3 is estimated to be less (more conservative) than the value presented by the CEOG (reference 3). This pipe at San Onofre is of a "superpipe" construction which significantly exceeds minimum ASME code requirements and, in our judgment, will reduce the probability for a break upstream of the MSIV.

- Operator Action: The CEOG believes the estimated time of 1 hour to empty the Refueling Water Storage Tank (RWST), based on data from a Westinghouse plant, is unrealistic. The CEOG estimated about 5 hours until the RWST is empty, assuming 10 ruptured tubes in a steam generator. This is based on analysis from Calvert Cliffs, a Combustion Engineering plant, documented in NUREG-0844.

  Although San Onofre Units 2 and 3 are not exactly the same as Calvert Cliffs, there are similarities between San Onofre and Calvert Cliffs related to a SGTR event. Based on our scoping evaluations of the RWST capacity and the Emergency Core Cooling System at San Onofre, it is our judgment that it would take about 4 hours to deplete the RWST with 10 ruptured steam generator tubes.

- Negative Impact of Overfill Protection: The potential loss of feedwater due to spurious actuation or testing may pose a greater risk to the core melt frequency than the potential of an overfill transient.

  As discussed above, the approach which has been evaluated to implement SGOPS at San Onofre Units 2 and 3 is closure of feedwater isolation valves. Any system designed to stop feedwater flow to a steam generator increases the likelihood of a demand for auxiliary feedwater or alternate heat removal because of an inadvertent or

spurious actuation. A scoping evaluation based on the current San Onofre Units 2 and 3 IPE shows that the increase in core damage risk from potential spurious actuation of the SGOPS is small but not insignificant when compared to the potential risk reduction benefit.

At the meeting documented in reference 5, the NRC agreed to review and evaluate the information presented by the CEOG and stated that implementation of SGOPS should be placed on hold for the CEOG plants until this review is completed. The NRC staff also indicated that plant specific responses regarding this issue should be provided to the NRC after the issuance of the NRC evaluation of the CEOG analysis.

Based on our reevaluation of the risks and benefits of installing a SGOPS, evaluating steam generator overfill events and the safety impact of implementing appropriate plant specific SGOPS modifications in our IPE, and the applicability of the CEOG positions summarized above for San Onofre Units 2 and 3, SCE is withdrawing the commitment to install a SGOPS at San Onofre Units 2 and 3. Following issuance of the NRC evaluation of the CEOG analysis, SCE will provide any additional information that is required.

If you have any questions on this subject, please call me.

Respectfully submitted,

R M Rosenblum

By: R. M. Rosenblum
Manager of Nuclear Regulatory Affairs

Enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V
C. W. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2&3
M. B. Fields, NRC Project Manager, San Onofre Units 2 and 3

State of California
County of Orange

On 3/30/93 before me, Mariane Sanchez, personally appeared R. M. Rosenblum, personally known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

Witness my hand and official seal.

Signature Mariane Sanchez

OFFICIAL SEAL
MARIANE SANCHEZ
Notary Public-California
ORANGE COUNTY
My Commission Expires
October 14, 1994

ENCLOSURE

REFERENCES

1. October 22, 1990, Letter from F. R. Nandy (SCE) to the Document Control Desk (NRC), Subject: Docket Nos. 50-361 and 50-362, Generic Letter 89-19, Safety Implications of Control Systems in LWR Nuclear Power Plants (TAC Nos. 74994 and 74995), San Onofre Nuclear Generating Station, Units 2 and 3

2. July 9, 1991, letter from F. R. Nandy (SCE) to the Document Control Desk (NRC), Subject: Docket No. 50-362, Generic Letter 89-19, Safety Implications of Control Systems in LWR Nuclear Power Plants (TAC Nos. 74994 and 74995), San Onofre Nuclear Generating Station, Unit 3

3. March 20, 1990, letter from R. M. Rosenblum (SCE) to the Document Control Desk (NRC), Subject: Response to Generic Letter 89-19, "Safety Implication of Control Systems in LWR Nuclear Power Plants," San Onofre Nuclear Generating Station, Units 2 and 3

4. August 30, 1990, letter from John T. Larkins (NRC) to Harold B. Ray (SCE) and Gary D. Cotton (SDG&E), Subject: Southern California Edison Company's Response to Generic Letter 89-10 Regarding Safety Implications of Control Systems in LWR Nuclear Power Plants (TAC Nos. 74994 and 74995)

5. November 27, 1990, Meeting Summary, Subject: CEOG/NRC Overfill Protection (GL 89-19); November 20, Forwarding of Summary