

August 16, 1990

Docket No. 50-206

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Mr. Harold B. Ray
 Senior Vice President
 Southern California Edison Company
 Irvine Operations Center
 23 Parker Street
 Irvine, California 92718

Dear Mr. Ray:

SUBJECT: SAFETY INJECTION SYSTEM UPGRADES FOR SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1 (TAC NO. 63299)

By letter dated October 26, 1988, you proposed to make certain upgrades to the safety injection system. Your submittal was made in response to an NRC request that Southern California Edison Company evaluate additional enhancements that could be made to the system at a reasonable cost commensurate with the reliability improvements that could be gained. It is currently our understanding that you intend to revise your submittal and that further NRC review of the October 26 response is not warranted. Therefore, we have discontinued our review of your submittal.

In order to facilitate your next submission on this subject and recognizing the scope of NRC review which will be required, the enclosure to this letter provides comments for your consideration regarding this matter. Because our Confirmatory Order dated January 2, 1990, requires resolution of this item prior to restart from the Cycle 12 refueling outage, you are encouraged to expedite your efforts to address this issue. We anticipate that NRC review of your response will require approximately 12 months, and you should plan to make your submittal accordingly.

Please contact us if you should have any questions regarding this matter.

Sincerely,

Original signed by James E. Tatum
 James E. Tatum, Project Manager
 Project Directorate V
 Division of Reactor Projects - III,
 IV, V and Special Projects
 Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

FC	:DRSP/PDV	:DRSP/PDV	:(A)DRSP/D:PDV	:	:
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DATE	:8/17/90	:8/14/90	:8/18/90	:	:

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San Onofre Nuclear Generating
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NRC STAFF COMMENTS RE: PROPOSED UPGRADES TO
THE SAN ONOFRE UNIT 1 SAFETY INJECTION SYSTEM

Background Information

In September 1981, both trains of safety injection failed to function at San Onofre Unit 1 due to common mode failure problems associated with switchover valves HV-851 A and B (LER Nos. 81-20 and 81-21 dated September 14, 1981). As a result of that event, Southern California Edison Company (SCE or the licensee) implemented several system design modifications, performed extensive testing and established surveillance requirements to assure that the safety injection system (SIS) would be operable for interim plant operation. For long-term resolution of this problem, the licensee committed to replace the hydraulically operated switchover valves such that valve cavity venting and trip/restart of the feedwater pumps would not be required; and also committed to perform a detailed evaluation of the San Onofre Unit 1 SIS to determine if major redesign was warranted (SCE letter dated October 16, 1981).

As an alternative to replacement of the hydraulically operated switchover valves, the licensee proposed to make certain modifications which would result in a dedicated SIS that would function independently of the feedwater system (SCE letter dated September 28, 1982). Implementation of the proposed modifications would eliminate the need to cycle the hydraulically operated switchover valves during safety injection initiation and the licensee concluded that valve replacement would therefore not be required.

By letter dated October 14, 1986, the licensee issued its Third Edition of the Integrated Living Schedule. In its submittal, the licensee indicated that the proposed modifications to establish a dedicated SIS were being cancelled because the modifications were not cost beneficial. The licensee provided supporting details regarding this decision in a letter dated December 22, 1986.

At the request of the NRC staff, the licensee agreed to evaluate modifications that could be made to the San Onofre Unit 1 SIS that would improve system reliability and be cost-effective. The licensee completed its evaluation and submitted its proposed upgrade to the SIS for NRC approval by letter dated October 26, 1988.

During recent discussions with the NRC staff, the licensee indicated that additional design considerations will necessitate a revised submittal for the proposed SIS upgrades and that the NRC staff should discontinue its review of the October 26 response. The NRC staff has therefore discontinued its review. However, based on the review that has been completed, the NRC staff has prepared comments that should be considered and addressed by the licensee in its next submittal on this subject.

Currently, the licensee is required by NRC Confirmatory Order dated January 2, 1990, to implement modifications to the San Onofre Unit 1 SIS and recirculation system prior to plant restart from the Cycle 12 refueling outage.

NRC Staff Comments

The licensee's commitment to replace the hydraulically operated switchover valves in the San Onofre Unit 1 SIS and its commitment to perform a detailed analysis of the SIS to determine if additional modifications are warranted was credited by the NRC staff in approving Technical Specifications regarding this issue and allowing San Onofre Unit 1 to return to service (NRC Safety Evaluation dated November 5, 1981). The licensee's commitment to implement modifications that would result in a dedicated SIS was credited by the NRC staff in determining that replacement of the hydraulically operated switchover valves was no longer required (NRC letter dated May 27, 1983). Therefore, NRC review and approval of the licensee's change in commitments and long-term resolution of this issue is required.

The NRC staff has reviewed to a limited degree the licensee's most recent submittal dated October 26, 1988, regarding proposed upgrades to the San Onofre Unit 1 SIS. Based on that review, and recognizing the scope of the NRC review that will be required to fully address this matter, the following comments are provided for consideration by the licensee in preparing its next submittal on this subject.

1. The licensee should provide a complete submittal to address this issue. In this regard, the following information should be provided:
 - a. The background for this issue should be discussed in detail including a complete description of previous commitments that were made, why the commitments were necessary at the time and why they are no longer appropriate.
 - b. A complete description of all studies and evaluations that have been completed which provide information relative to design adequacy of the SIS should be provided. The actual studies and evaluations should be included with the licensee's response (if not previously submitted) for NRC review. Additionally, the licensee should provide a complete assessment of the limitations, uncertainties and reliability of studies and evaluations that have been completed.
 - c. Based on the studies and evaluations that have been completed, the licensee should provide its assessment of all SIS design weaknesses and its proposed resolution of those weaknesses, or provide justification for why resolution may not be warranted.
2. The 1986 value-impact study should be revised to include the following considerations:
 - a. The data base used to calculate the failure frequency for the SIS hydraulically operated switchover valves is based on experience with standard motor operated gate valves. The characteristics of the San Onofre valves are expected to be quite different and should be addressed.

- b. The SIS hydraulically operated switchover valves are exposed to high differential pressure during normal plant operation. These valves could remain closed under this high differential pressure for as long as 18 months. The effect of this long-term set should be addressed.
3. The licensee should describe the design basis for the San Onofre Unit 1 SIS and identify to what extent the SIS satisfies regulatory requirements including Criterion 35 of 10 CFR Part 50, Appendix A, "Emergency Core Cooling."
4. The licensee should identify the analysis of record for the San Onofre Unit 1 ECCS and provide its assessment of the continued validity of that analysis.
5. The licensee should describe which computer codes are included in the approved analytical methods for the San Onofre Unit 1 ECCS. Additionally, the licensee should explain why RETRAN is being used for its small break LOCA analysis, and why WFLASH instead of NOTRUMP is being used to benchmark the RETRAN code.
6. The licensee's submittal should include an evaluation that demonstrates that the proposed upgrades to the San Onofre Unit 1 ECCS will not degrade the existing ECCS or invalidate the accident analyses that continue to be credited for the ECCS.
7. The licensee's submittal should be reviewed in total by its current engineering and licensing organizations to assure that all information is accurate, the evaluation is complete and that conclusions are valid.

Principal Contributors: J. Tatum
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