



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO REQUESTS FOR RELIEF FROM INSERVICE TESTING REQUIREMENTS  
SOUTHERN CALIFORNIA EDISON COMPANY  
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1  
DOCKET NO. 50-206

Pump Relief Request PRR-10. The licensee has requested interim relief from the ASME Code, Section XI, Paragraph IWP-3000 (Code) requirement to measure pump flow rate once every three months for Safety Injection (SI) pumps G50A and G50B. During refueling outage 12 (the plant is now in RO-11) the licensee has committed to performing modifications to install an instrumented bypass line which would allow full or substantial flow testing at a refueling outage frequency as discussed in Position 9 of Generic Letter (GL) 89-04.

Basis for Relief. The only available flow paths for periodic testing of the SI pumps during normal power operation (Modes 1 and 2) are the recirculation or mini-flow lines designed to provide the required minimum flow for pump cooling. Presently, the design does not provide instrumentation to measure this flow. IST data is obtained while the pump operates in a fixed resistance flow path. GL 89-04 permits use of minimum flow recirculation lines for inservice testing only if an alternative path does not exist.

In cases where only the mini-flow recirculation line is available for pump testing, regardless of the test interval, the GL requires flow instrumentation which meets the requirements of IWP-4110 and IWP-4120 to be installed in the mini-flow line. Installation of this instrumentation is necessary to provide flow rate measurements during pump testing so this data can be evaluated with the measured pump differential pressure to monitor for pump hydraulic degradation.

In a letter dated May 18, 1990, the NRC requested that an evaluation of the possibility of performing full flow testing of the SI pumps be undertaken by SCE. As the result of SCE's evaluation, they determined that three potential test paths exist. These can be seen on P&ID 5178115. Each of these paths was further examined and found to be unacceptable.

It was concluded that the SI pumps can only be tested using the minimum flow recirculation lines.

Alternate Testing:

Interim: Test the SI pumps once every quarter (92 days) on mini-flow in accordance with ASME Code Section XI, except for the measurement of flow rate.

Long Term: By the end of the Cycle 12 refueling outage:

- a) implement modifications to enable improved flow testing of the SI pumps in accordance with technical position 9 of GL 89-04, and
- b) begin improved flow testing.

Evaluation. Current design of the safety injection (SI) pump system does not allow full-flow testing during power operation or cold shutdowns as it would require a large amount of water to be pumped into the RCS through the feedwater pumps. There is no practical way of dealing with this excess water. Pumping into the RCS using the safety injection path also causes back leakage through the feedwater pump seals which is a contamination concern.

The licensee has proposed to perform quarterly testing on the SI pumps using the non-instrumented mini-flow lines and has committed to performing modifications during refueling outage 12 to allow "improved flow testing." Through further discussion with the licensee it was determined that the modifications will involve installing an instrumented test loop bypassing the feedwater pumps that would allow substantial-flow (though possibly not full-flow) testing on a refueling outage basis. Substantial flow testing is acceptable provided that the flow is within the stable regime of pump operation. In accordance with GL 89-04, Position 9, the licensee should continue to include quarterly testing on the mini-flow line, measuring at least pump differential pressure and vibration, in the test procedures initiated after the modifications are accomplished.

The modifications proposed by the licensee can only be accomplished during a refueling outage. As the licensee is now nearing the end of refueling outage 11, the design changes cannot practicably be accomplished until refueling outage 12, which necessitates this interim relief to be in effect for one complete refueling cycle, or 18 to 24 months. Since the safety injection pump testing is not a new issue between the licensee and the NRC, one refueling outage is the maximum amount of time that relief can be granted. The licensee must start monitoring hydraulic degradation of the safety injection pumps in accordance with the Code by the end of the interim period as this relief may not be extended.

An interim period is necessary to give the licensee time to initiate system design changes. Forcing immediate compliance with the Code testing requirements would result in an extended outage which would be a burden for the licensee. The licensee's proposal to perform quarterly testing measuring pump differential pressure and vibration, while not acceptable for the long term, should provide adequate assurance of operational readiness and a reasonable alternative to the Code test requirements for an interim period until the end of refueling outage 12.

Based on the determination that compliance with the Code requirements is impractical, considering the licensee's proposed testing, and considering the burden on the licensee if the Code requirements are imposed, interim relief should be granted for the Code requirement as requested per 10 CFR 50.55a(g)(6)(i) to allow the licensee to initiate changes that will permit at least substantial-flow testing on a refueling outage frequency.