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U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Docket No. 50-361
Licensee Event Report 82-006
San Onofre-Unit 2

Attention: Mr. R. H. Engelken, Regional Administrator

Dear Mr. Engelken:

In our letter to you dated March 30, 1982, forwarding Licensee Event Reports (LER) 82-002 and 82-003, we indicated that a separate LER, addressing the inconsistency in Refueling Water Storage Tank (RWST) boron concentrations, would be submitted within 30 days of the event for information.

Attached is LER 82-006, reporting for information only, the stratification which had occurred in the SONGS Unit 2 RWST. Due to this stratification, RWST boron concentration samples were not representative of tank contents and consequently contributed to the unplanned positive reactivity addition reported in LER 82-003. It must be noted that the borated water source and flow path required by Technical Specification LCO's 3.1.2.1 and 3.1.2.7 was being satisfied by the Boric Acid Makeup Tanks and Boric Acid Pumps and not the RWST which was isolated, except during recovery from the loss of shutdown cooling event, during this period. The following is a summary of the operations and events resulting in discovery of the stratification problem.

On February 24, 1982, Operations personnel began filling Refueling Water Storage Tanks T005 and T006. The tanks were first filled to the 15% level with unborated water, and then, subsequently, filled to 25% with batches of water borated to 3000 ppm.

On March 6, 1982, the two RWST's were separated by closing their cross-connect pipe, and borated water, at 2000 ppm, was batched into T006 causing its level to rise to about 85%.

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As a result of the Loss of Shutdown Cooling Event on March 14, 1982 (see LER's 82-002 and 003), several thousand gallons of water were pumped from T006 into the RCS and T005. Boron samples from the bottom of T006 prior to the event indicated about 2000 ppm. Since the RCS dilution was greater than expected for this boron concentration, T006 samples were taken at various elevations within the tank. These sample results showed concentrations of 612 ppm at the top, 1490 ppm in the middle, and 1501 ppm at the bottom.

The stratification found in T006 is attributed to the inability to mix the tank in its isolated condition. All additions to and removals from T006 are made from the bottom of the tank. For this reason, the original unborated water in T006 was never adequately mixed with the subsequent borated water additions. T005, on the other hand, has water returned at the top of the tank and did not experience this stratification.

On March 19, 1982, both T005 and T006 were recirculated. As a part of this recirculation, a temporary line was installed, which drew from the bottom of T006 and returned to the top. This effectively removed the stratification in T006.

Operating instructions have been revised to provide for recirculation of RWST-T006 using a temporary system taking suction from the bottom of T-006 and discharging to the top. Permanent modification to ensure adequate mixing in T006 is presently scheduled for completion before December 31, 1982.

Should you require further information, please contact me.

Sincerely,

Enclosure: (LER No. 82-006)

cc: U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement

U. S. Nuclear Regulatory Commission
Office of Management Information and Program Control

Institute of Nuclear Power and Operations (INPO)

A. E. Chaffee (USNRC Resident Inspector, Unit 2)