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

Gentlemen:

SUBJECT: Docket 50-206
Uninterruptible Power Supply Battery Replacement
San Onofre Nuclear Generating Station
Unit 1

During the Cycle 10 refueling outage, modifications were implemented to repower Recirculation Valve MOV-358 from 480 Volt MCC No. 3 to the Uninterruptible Power Supply (UPS) for Safety Injection Valve MOV-850C. These modifications were implemented to eliminate a single failure susceptibility in the transfer scheme for the 480 Volt Swing Bus during post LOCA recirculation. Amendment Application No. 155 submitted by letter dated November 7, 1988 requested changes to Technical Specifications affected by this design change. The NRC approved this request by issuance of Amendment No. 120 by letter dated March 20, 1989. The purpose of this letter is to formally document the information previously provided to the NRC during phone conversations in response to NRC questions in early April 1989. The NRC was informed that field tests to verify inverter operation at minimum battery voltage indicated that a larger capacity battery was required. The MOV-850C UPS battery was replaced with the SONGS 1 former Security UPS battery which was not in use for security functions.

As a result of concerns regarding inverter performance at minimum battery voltage, a test was performed on the MOV-850C UPS battery. The test determined that the capacity of the battery was not sufficient to satisfy the voltage requirements of the UPS inverter for MOV-850C and MOV-358 assuming the temperature correction factor (35° F) and aging compensation (80%) guidelines of IEEE 485-1983. The battery load profile calculation was revised prior to implementation of the design change, and indicated sufficient capacity on the existing UPS battery. The calculation, which used test data taken during MOVATS testing for NRC IE Bulletin 85-03, did not record the in-rush current that the inverter would draw from the battery during the first 20 milliseconds of valve operation which causes a large voltage drop internal to the battery.

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cycle (30 minutes) results in a momentary unacceptable voltage drop internal to the battery causing a low input voltage inverter shutdown. Field testing performed subsequent to issuance of Amendment No. 120 and prior to Mode 4 entry identified this problem.

The SONGS 1 former security UPS battery, which is rated at 800 ampere-hours, has much greater capacity than the 240 ampere-hour MOV-850C UPS battery and has been upgraded to Safety Related Seismic Category A to satisfy the safety related service requirements of the MOV-850C UPS. The battery is documented to be qualified to Class 1E and seismic response spectra requirements specified for the SONGS 1 Safety Related Seismic Category A Battery No. 2. The battery has been maintained in accordance with IEEE Standard 450-1980, and previous testing has demonstrated satisfactory operating condition. All Seismic B over A interactions have been resolved, and the new cable raceway meets Seismic Category A requirements.

Modifications to utilize the former security UPS battery were completed in mid-April. Performance and service tests were completed on this battery and the results indicated the battery was capable of functioning properly at the minimum expected voltage at the end of the battery duty cycle with minimum temperature (35°F) and maximum aging (80%). The former MOV-850C UPS battery has been removed from the plant.

If you have any questions or require additional information, please let me know.

Very truly yours,

cc: J. B. Martin, Regional Administrator, NRC Region V
F. R. Huey, NRC Senior Resident Inspector, San Onofre Units 1, 2, and 3