CT-1207

U.S. Department of Energy

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U.S. NUCLEAR REG COMM.

Advisory Committee on Reactor Safeguards
U. S. Nuclear Regulatory Commission
Washington, DC 20555

DISTRIBUTED TO ACRS MEMBERS

Attention: Mr. S. Duraiswamy

Subject: San Onofre Unit 1

Reference:
1. Letter: J. M. Curran (SCE) to R. H. Engelken (NRC Region V, dated November 8, 1979
2. Letter: J. T. Head (SCE) to R. H. Engelken (NRC Region V) dated November 21, 1979
3. Letter: J. T. Head (SCE) to R. H. Engelken (NRC Region V) dated November 29, 1979

Reference (1) provided prompt notification of the loss of No. 1 480V bus due to a short at the B phase bus connection to circuit breaker 52-1107.

Reference (2) transmitted Licensee Event Report No. 79-017 in accordance with the requirements of San Onofre Unit 1 Technical Specification 6.9.2.a.

Reference (3) transmitted Revision 1 to Licensee Event Report No. 79-017 which contained a supplemental report detailing the incident.

The basic event which occurred at 1236 on November 7, 1979 involved a fire and the loss of No. 1 480V bus. The cause of the event was reported as: "Two or three dead rodents and parts of rodents were found in the bottom of the switchgear housing the failed bus. A rodent bridging two energized phases could be expected to initiate flashover and cause the damage previously described."

The upper 480 volt run back connections from the main bus to the east recirculation pump circuit breaker (No. 52-1107) had experienced severe damage due to a power arc flashover. The damage was in the area directly behind the insulator supports for the stationary primary disconnect. The center (B) phase run back had been completely burned in two for a distance of 6 to 8 inches. The stationary primary disconnect stub remained with the primary disconnect. When the breaker was withdrawn a second piece of the run back that had fallen to the bottom of the switchgear was discovered. Other arc damage to the metal and to the insulation had also been experienced. Some of the control wires to the secondary disconnects of the breakers had been burned in two. Heat damage to control wire and insulation in the direct vicinity of the flashover was evident. Smoke damage was evident throughout the switchgear.

Table I lists the circuits which were out of service due to the loss of the No. 1 480V bus.

This particular event has the ingredients of a common mode failure not previously postulated. Had there been a swarm of rodents which were present in the initial switchgear area and had the survivors been driven by smoke down cable trays and empty conduits to an adjoining area, the incident could have been repeated on another bus.

This event warrants further consideration and additional information is required to perform an adequate assessment. Answers to the following questions would be desirable.

1. What has been the experience with similar events at non-nuclear installations?
2. Why did not protective devices function to protect the bus?
3. What was the phase to phase current during the flashover?
4. How long did the flashover exist?
5. What is the phase to phase bus spacing?
6. What are the bus dimensions?
7. Are the busses protected?
8. What is the wiring arrangement of the involved circuits (diesels, off-site power, connected equipment)?
9. What is the physical layout of the particular room and adjoining switchgear areas?
10. How did the rodents gain access to the switchgear room?
11. Is there a correlation between the time of day (lunch hour) and the event?
12. What attracted the rodents to this room? Was food present?
13. What class were the rodents (mice, rats, ...)?

Sincerely,

Walter C. Lipinski

Walter C. Lipinski
Reactor Analysis & Safety Division

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Table I

## LIST OF CIRCUITS OUT OF SERVICE DUE TO THE LOSS OF NO. 1 480V BUS

Diesel Generator No. 1 Motor Control Center - MCC-1B

Supply Fan #A-40

Exhaust Fan #A-42

Pressurizer Heater (Back-up) Group C

Fire Pump G11 (West)

Recirculation Pump G45 A (East)

Instrument Air Compressor K-1 A

Screen Wash Pump G43

Saltwater Cooling Pump G13 A (North)

Pressurizer Heater Control Group A

Condenser Vac. Pump X7 A (East)

Motor Control Center No. 1

Refueling Water Pump G27 A (North)

Component Cooling Pump G14 A (North)

Residual Heat Removal Pump G14 A (East)

Motor Control Center No. 1A MCC-1

Battery Charger Set A 125KW 125DC