SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, P.O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211
AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

AGM/NUC 89-222

November 20, 1989

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Docket No. 50-312
Rancho Seco Nuclear Generating Station
License No. DPR-54
LICENSEE EVENT REPORT 89-11: AUTOMATIC ACTUATION OF THE 'A' EMERGENCY DIESEL GENERATOR DUE TO A LOSS OF POWER TO THE NUCLEAR SERVICES BUS

Attention: George Knighton

In accordance with the requirements of 10 CFR Part 50.73(a)(2)(iv), the Sacramento Municipal Utility District hereby submits Licensee Event Report Number 89-11.

Members of your staff with questions requiring additional information or clarification may contact Mr. Robert Jones at (209) 333-2935, extension 4675.

Sincerely,

J. R. Shetler for

Dan R. Keuter
Assistant General Manager
Nuclear

Attachment

cc w/atch: J. B. Martin, NRC, Walnut Creek
A. D'Angelo, NRC, Rancho Seco
INPO

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NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Rancho Seco Nuclear Generating Station

DOCKET NUMBER (2): 0 5 0 0 0 3 1 2

PAGE (3): 1 OF 0 5

TITLE (4): Automatic Actuation of the 'A' Emergency Diesel Generator Due To A Loss of Power to the Nuclear Services Bus

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
1 0	2 1	8 9	8 9	0 1 1	0 0	1 1	2 0	8 9		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

[ ] 20.402(b)	[ ] 20.405(c)	[X] 50.73(a)(2)(iv)	[ ] 73.71(b)
[ ] 20.405(a)(1)(i)	[ ] 50.36(c)(1)	[ ] 50.73(a)(2)(v)	[ ] 73.71(c)
[ ] 20.405(a)(1)(ii)	[ ] 50.36(c)(2)	[ ] 50.73(a)(2)(vii)	[ ] OTHER (Specify in Abstract below and in Text, NRC Form 366A)
[ ] 20.405(a)(1)(iii)	[ ] 50.73(a)(2)(i)	[ ] 50.73(a)(2)(viii)(A)	
[ ] 20.405(a)(1)(iv)	[ ] 50.73(a)(2)(ii)	[ ] 50.73(a)(2)(viii)(B)	
[ ] 20.405(a)(1)(v)	[ ] 50.73(a)(2)(iii)	[ ] 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: Robert Jones, Licensing Engineer

TELEPHONE NUMBER: AREA CODE 9 1 6 | 4 5 2 - 3 2 1 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE) [X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At approximately 0338 hours on October 21, 1989, Operations was transferring the power supply to Nuclear Services 4160 volt Bus 4A from Startup Transformer 1 (normal power supply) to Startup Transformer 2. The transfer in power supplies was being performed as part of Surveillance Procedure SP.351A (Diesel Generator SFAS and Loss of Offsite Power Loading Scheme Surveillance Test).

The Assistant Shift Supervisor closed Startup Transformer 2 supply breaker 4A10 and approximately two seconds later opened Startup Transformer 1 supply breaker 4A01. Opening supply breaker 4A01 resulted in a loss of power to Nuclear Services 4160 volt Bus 4A. The de-energized bus caused the automatic actuation of the 'A' Emergency Diesel Generator (EDG) due to undervoltage. Operators took appropriate steps to secure the 'A' EDG. An investigation revealed that breaker 4A10 was in the test position; not in the connected position as it should have been.

Supply breaker 4A10 was placed in the connected position so that testing per SP.351A could resume. The event did not result in damage to any equipment nor was there any threat to public health and safety.

The autostart of the 'A' EDG constitutes an inadvertent actuation of an Engineered Safety Feature and is reportable pursuant to 10 CFR 50.73(a)(2)(iv).

NRC Form 366A
(9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

DESCRIPTION OF THE EVENT

At approximately 0338 hours on October 21, 1989, Operations was transferring the power supply to Nuclear Services 4160 volt Bus 4A from Startup Transformer 1 (normal power supply) to Startup Transformer 2. The transfer in power supplies was being performed as part of Surveillance Procedure SP.351A "Refueling Interval Diesel Generator (G-100A) SFAS and Loss of Offsite Power Loading Scheme Surveillance Test."

The Assistant Shift Supervisor closed Startup Transformer 2 supply breaker 4A10 and approximately two seconds later opened Startup Transformer 1 supply breaker 4A01. Opening supply breaker 4A01 resulted in a loss of power to Nuclear Services 4160 volt Bus 4A. The loss of power to Bus 4A caused Decay Heat Removal (DHR) pump P-261A to trip. The de-energized bus also caused the automatic actuation of the 'A' Emergency Diesel Generator (EDG) due to undervoltage. No other significant equipment was affected; backup power supplies operated as required.

Operators started the 'A' DHR pump manually approximately 10 minutes after it stopped and took appropriate steps to secure the 'A' EDG. The reactor core temperature did not change during the event. The Shift Supervisor notified the NRC in accordance with 10 CFR 50.72(b)(2)(ii) and initiated a Potential Deviation from Quality.

After the inadvertent actuation of the 'A' EDG, the Test Director initiated a work request to determine what caused the loss of power to Bus 4A. In preparation for troubleshooting, the operating crew, the Test Director, and an electrical technician discussed potential cause(s) and the possibility of losing power to the bus while troubleshooting. The Shift Supervisor transferred to the 'B' DHR system to preclude another loss of DHR during troubleshooting.

The crew thought that the most probable cause for the loss of power to Bus 4A was that Startup Transformer 2 supply breaker 4A10 tripped open after transferring power supplies to the bus. To test the suspected problem, an electrical technician adjusted supply breaker 4A10 to prevent it from tripping open. Operators closed supply breaker 4A10 then opened supply breaker 4A01. Opening 4A01 again caused a loss of power to Bus 4A, resulting in the automatic actuation of the 'A' EDG. The Shift Supervisor notified the Operations Manager and the NRC. Further investigation revealed that breaker 4A10 was in the test position; not in the connected position as it should have been.

The autostart of the 'A' EDG constitutes an inadvertent actuation of an Engineered Safety Feature and is reportable pursuant to 10 CFR 50.73(a)(2)(iv).

PLANT OPERATING CONDITION

The plant was in refueling shutdown at the time of the event.

The plant has been shut down since June 7, 1989.

The reactor coolant temperature was approximately 110°F.

The 'A' DHR system was in operation during the event. However, the 'B' DHR system was placed in operation during troubleshooting.

CAUSE OF THE EVENT

Operations conducted an investigation to determine why supply breaker 4A10 was in the test position. The last time that supply breaker 4A10 was manipulated was during the performance of SP.319A "Refueling Interval Diesel Generator (G886A) SFAS and Loss of Offsite Power Loading Scheme Surveillance Test." Although SP.319A requires that breaker 4A10 be placed in the test position to conduct the surveillance, the procedure (step 6.8.2.5) also requires that the breaker be restored to the connected position (racked-in) after completion of the surveillance.

The sign-off step in SP.319A to verify that breaker 4A10 was racked-in was signed by an operator in the Control Room. The operator in the Control Room was communicating by telephone to non-licensed operators at the breaker panel. The operator in the Control Room believed that the operators at the breaker panel had racked-in the breaker and therefore signed procedure step 6.8.2.5 as having been completed. However, the operators at the breaker panel do not recall having racked-in the breaker. This lack of effective communication resulted in the control room operator believing that the breaker line-up had been correctly restored after having completed SP.319A.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS)
COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME

The 'A' EDG is part of the Emergency Diesel Generator System. The EIIS equivalent system is the Emergency Onsite Power Supply System and the system identifier is EK. The EIIS component function identifier is DG.

Startup Transformers 1 and 2 are part of the AC Electrical Distribution System (6.9 Kv and above). The EIIS equivalent system is the Medium Voltage Power (AC) System and the system identifier is EA. The EIIS component function identifier is XFMR.

Supply breakers 4A01 and 4A10 are part of the Vital Electrical Distribution System (4160 volt and below). The EIIS equivalent is the Low Voltage Power System and the system identifier is EC. The EIIS component function identifier is BKR.

The 'A' Nuclear Service Raw Water (NSRW) pump is part of the NSRW System. The EIIS equivalent system is the Essential Service Water System and the system identifier is PI. The EIIS component system identifier is P.

The diesel generator vent fans are part of the Emergency Onsite Power Supply Building Environmental Control System and the EIIS system identifier is VJ. The EIIS component identifier is FAN.

The 'A' Nuclear Service Cooling Water (NSCW) pump is part of the NSCW system. The EIIS equivalent system is the Closed/Component Cooling Water System and the system identifier is CC. The EIIS component identifier is P.

The 'A' DHR pump is part of the DHR system. The EIIS equivalent system is the Residual Heat Removal system and the system identifier is BP. The EIIS component identifier is P.

AUTOMATICALLY AND MANUALLY INITIATED SAFETY SYSTEM RESPONSE

When power was lost to Bus 4A, the 'A' EDG started automatically and DHR Pump P-261A tripped. The 'A' NSRW pump and the diesel generator vent fans loaded back onto the 4A bus after EDG supply breaker 4A08 closed.

The 'A' NSCW pump was started manually approximately 5 minutes after breaker 4A08 closed. DHR Pump P-261A was started manually approximately 10 minutes after it tripped. The EDG was paralleled to the grid, the load reduced, breaker 4A08 opened, and the diesel secured.

CONSEQUENCES OF THE EVENT

The 'A' EDG started and operated as required. Neither the reactor core temperature nor the reactor vessel water level changed during the event.

The event did not result in damage to any equipment nor was there any threat to public health and safety.

CORRECTIVE ACTIONS

- Supply breaker 4A10 was placed in the connected position so that testing per SP.351A could resume.

- The Shift Supervisors reviewed this event with their crews to discuss lessons learned. The briefing emphasized the importance of maintaining effective communications for all evolutions.

NRC Form 366A
(9-83)

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PREVIOUS SIMILAR EVENTS

LER 85-13 discusses the actuation of the 'A' EDG due to an overvoltage condition on Nuclear Services buses 4A and 4A2.

LER 85-21 discusses the actuation of the 'A' EDG when the 4A Bus supply breaker tripped due to an overvoltage condition.

LER 87-28 discusses the actuation of the 'B' EDG due to a high switchyard voltage signal.

LER 88-02 discusses the actuation of the 'A' EDG when the 4A Bus was inadvertently de-energized during the performance of a special test procedure.

*U.S. GPO: 1988-520-589:00070