



Commonwealth Edison

Zion Generating Station
101 Shiloh Blvd.
Zion, Illinois 60099
Telephone 708 / 746-2084

June 16, 1994

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

Dear Sir:

The enclosed Licensee Event Report number 94-006, Docket No. 50-295/DPR-39 from Zion Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(i)(b), which requires a 30 day written report when any operation or condition occurs that is prohibited by the plant's Technical Specifications.

Very truly yours,

E. A. Broccolo
Station Manager
Zion Generating Station

EAB/af

Enclosure: Licensee Event Report

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
ComEd Distribution List

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LICENSEE EVENT REPORT (LER)

Form Rev 3.0

Facility Name (1) Zion Unit 1 & 2	Docket Number (2) 0 5 0 0 0 2 9 5	Page (3) 1 of 0 3
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Title (4) Missed Surveillance on Containment Pressure High High Circuitry Because of an Overlap Deficiency in Safeguards Testing.

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)	
0 5	1 9	9 4	9 4	0 0 6	0 0	0 6	1 6	9 4	Zion Unit 2	0 5 0 0 0 3 0 4	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)			
POWER LEVEL (10) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	in Abstract
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	below and in
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	Text)

LICENSEE CONTACT FOR THIS LER (12)

Name Arthur R. Campos, System Engineering	ext. 2146	TELEPHONE NUMBER AREA CODE 7 0 8 7 4 6 - 2 0 8 4
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B				N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	Expected Submission Date (15)	Month	Day	Year
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ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

On May 19, 1994, System Engineering became aware that a overlap testing deficiency existed for Containment Pressure High High (CPHH) [JE] circuitry. The section of untested circuitry consisted of wiring and fuses between the Eagle 21 output and the Safeguards relay for CPHH. This problem was found to be isolated to the CPHH channels, and did not exist prior to the Eagle 21 modification.

The cause of this event is attributed to inadequate modification design review. The safety significance of this event is minimal, since existing emergency procedures provide direction for manual containment spray in the event that the automatic actuation fails. The immediate corrective action for this event was to test the circuitry by manually tripping the channel from Eagle 21, and verifying that the CPHH relay energizes.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		///	Number	///	Number								
Zion Unit 1 & 2	0 5 0 0 0 2 9 5	9	4	-	0	0	6	-	0	0	0 2	DF	0 3

TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]

A. CONDITION PRIOR TO EVENT

MODE 5 - Cold Shutdown RX Power 0 % RCS [AB] Temperature/ Pressure <200°F/ psig

MODE 1 - Power Ops RX Power 100 % RCS [AB] Temperature/ Pressure 559°F/ 2230 psig

B. DESCRIPTION OF EVENT

On May 19, 1994, Unit 1 was in cold shutdown, and Unit 2 was at 100% power operation. The System Engineering Electrical Group was reviewing an outstanding Engineering Assistance Request (EAR) on Containment Pressure High High (CPHH) [JE] testing methodology. The request identified a potential deficiency in overlap testing of CPHH channels, because of the testing technique utilized by the Eagle 21 Process Protection System.

The EAR identified that the Eagle 21 Instrument Maintenance (IM) procedure tests the CPHH channels by energizing the Eagle Partial Trip (EPT) board output, but cycles that current through a dummy load on a Eagle Contact Output board. The Operating Department Periodic Test for Engineered Safeguards testing (PT 10-B) utilizes a test switch to energize the CPHH relay, on one train of safeguards at a time, while that train of safeguards is in test. This is the same relay that would be energized by the Eagle EPT board on an actual Containment High High Pressure situation. Because the Eagle 21 IM testing cycles the EPT output through a dummy load, the ability of Eagle 21 to energize that relay was not verified during required surveillances. The portion of untested circuitry consisted of two fuses and field cabling between the safeguards relay rack and the Eagle 21 rack (total cable length is less than 50 ft. one way).

When the deficiency was determined to be valid, Unit 2 was placed on a 24 hr. LCO, per Technical Specification Surveillance Requirement, section 4.0.3. The Periodic Test PT 10-B was changed to allow a manual trip of one CPHH channel at a time from the Eagle 21 rack, while the corresponding train of safeguards is in test. This allowed the CPHH relay to be energized from a Eagle 21 rack to confirm operability. This was successfully accomplished for both Zion Units within a 24 hr. period. In addition, verification that the problem was isolated to CPHH channels was completed.

C. APPARENT CAUSE OF EVENT

The cause of this event is attributed to inadequate modification design review. The existing modification process requires that all procedures affected by the design change be revised to verify operability and interfacing functionality of new equipment. Multiple reviews of the design change were performed by System Engineering, and the Architect Engineers. The Eagle 21 modification (M22-2-88-061) included a test that manually tripped the CPHH EPT channels and verified that the CPHH relay energized, and remained energized for a 24 hour period (Technical Staff Special Procedure 179-92). However, this procedure focused on verifying the relay impedance compatibility with the EPT board output, and not overlap verification.

The IM procedures created for the new system were modeled after Westinghouse procedures, and went through the Zion review process, which includes System Engineering review. Still, this anomaly was never identified until October of 93. A contributing factor might be that the engineers reviewing this modification were more familiar with Eagle 21 than with Hagen 7100 equipment. In addition, the mindset existed that the system would interface with the field exactly the same way Hagen 7100 did.

The time lapse between addressing the EAR, and when it was generated, indicates an administrative problem with the way EARs are addressed by System Engineering. If the EAR had been addressed promptly, the 18 month surveillance requirement would not have been exceeded. Typically, a discovery of this nature would result in the generation of a Problem Identification Form (PIF), and would be reviewed and categorized by the Root Cause committee for investigation. However, the discoverer of the potential problem generated a EAR instead of a PIF.

Since the implementation of the Eagle 21 modification, a Modification Design Group has been established that manages modifications from start to finish. This relieves System Engineers of many of the project coordination tasks they were previously responsible for. This allows System Engineers to focus more on the design and procedure review process.

D. SAFETY ANALYSIS OF EVENT

This event resulted in the discovery of a section of safeguards circuitry that was not tested within the required surveillance interval. This section of circuitry consisted of passive components, and cable that were verified to be correctly connected during the Eagle 21 modification process. In addition, this section of circuitry was tested during the Eagle 21 modification, and while Hagen 7100 equipment was installed. Therefore, it is unlikely that this section of circuitry would not perform its intended function.

During the period of time that the untested circuitry existed, there was no accident condition that required the actuation of a CPHH channel. If a high high containment pressure situation had developed, and multiple problems existed with the Eagle 21 to Safeguards relay interface, a Zion Emergency Operating Procedure exists that provides guidance (E-D) for a manual containment spray actuation. Based on this information, this event is concluded to be of minimal safety significance to the plant and public.

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E. CORRECTIVE ACTIONS

Immediate Corrective Actions:

1. The PT 10-B test was changed to energize the CPHH relay from a manual trip of the EPT CPHH channel. This was performed on both Units within 24 hours of determining a deficiency.
2. All other channels from Eagle 21 that "Energize to Trip" were verified to not have the same testing deficiency.
3. The Hagen 7100 IM procedures for CPHH channels were reviewed to verify that this problem did not exist prior to Eagle 21.

Long Term Corrective Actions:

4. System Engineering will change the onsite review process for leaving cold shutdown to include a signoff to review outstanding EARs. (295-180-94-01201)
5. The Operating Procedures Group has changed testing procedures for future use.
6. The existing modification process already requires that affected procedures be revised prior to declaring a modification operable.

The Eagle 21 modification utilized Engineers with limited experience on Hagen 7100 equipment, IM Procedures, and overlap methods. However, implementation of the Eagle 21 modification has increased the level of awareness among Electrical Instrument and Control modification designers in these areas.

F. PREVIOUS EVENTS

During start-up of Unit 1 Eagle 21, it was discovered that a 2 sec. lag function for Narrow Range Reactor Coolant System Temperature loops (Delta T/ TAVE) was missing. The missing lag functions, which dampens noise generated by the fast response of Rosemount Resistive Temperature Detectors (RTD), caused the Tave and Delta T indicators to oscillate. This resulted in a unit derating to avoid inadvertently tripping the Over Power Delta T Turbine Runback setpoint. A setpoint change was implemented to insert the 2 sec. lag functions, after several weeks of trouble-shooting.

The cause for this event was also attributed to inadequate design review.

G. COMPONENT FAILURE DATA

None