



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

December 8, 1994

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

Dear Sir:

The enclosed Licensee Event Report number 94-011-00, Docket No. 50-304/DPR-48 from Zion Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(ii)(B). This requires a 30 day written report when an event or condition occurs that results in the plant being outside the design basis and a condition prohibited by the plants Technical Specification.

Very truly yours,

E. A. Broccolo
Station Manager
Zion Generating Station

EAB/sks

Enclosure: Licensee Event Report

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
Illinois Department of Nuclear Safety
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LICENSEE EVENT REPORT (LER)

Form Rev 3.0

Facility Name (1) Zion Unit 2	Docket Number (2) 0 5 0 0 0 3 0 4	Page (3) 1 of 0 4
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Title (4)
Failure to Recognize Inoperability of "0" EDG

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)													
Month	Day	Year	Year	/// /// /// Number	/// /// /// Number	Revision	Month	Day	Year	Facility Names	Docket Number(s)											
1	0	2	9	9	4	9	4	---	0	1	1	---	0	0	1	2	0	8	9	4	Zion Unit 1	0 5 0 0 0 2 9 5

OPERATING MODE (9) 1

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

<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 checked="" 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 Gary Fanning, System Engineer	ext. 2324	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	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
				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 October 29, 1994 for the purpose of collecting data for the Degraded Voltage Calculation Program, an attempt was made to start the "0" Emergency Diesel Generator (EDG) Vent Fan (Unit 2 feed) so that current and voltage readings could be taken. The fan did not start. Based on operability of the Unit 1/normal power feed, the "0" EDG was incorrectly assessed as operable by station personnel at this time. On October 31, 1994 at 0922, 2A EDG was declared inoperable due to a light bulb failure, causing a small local panel fire. Damage was limited to the light bulb socket and minor wiring. Therefore, when "2A" EDG was declared inoperable, the plant was placed outside its design basis with two EDG's unavailable for a period of time. In addition, the failure to identify that the "0" EDG was inoperable, resulted in a planned maintenance activity for the 2B Safety Injection Pump being allowed to proceed. The pump was taken out of service at 0550 on October 31, 1994.

This event was caused by management deficiency. A failure to recognize that the design basis accident of concern is "a total loss of offsite power concurrent with an SI", as opposed to "a single unit loss of offsite power concurrent with an SI" caused the station to inadequately assess this event. Contributing to the incorrect assessment of the "0" EDG operability was the fact that the Zion Operability Determination Manuals (ZOOM), did not address fan power supply requirements for the EDG operability.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION													Form Rev 3.0									
FACILITY NAME (1)	DOCKET NUMBER (2)								LER NUMBER (6)						Page (3)							
									Year	/// /// ///	Sequential Number	/// /// ///	Revision Number									
	Zion Unit 2	0	5	0	0	0	3	0	4	9	4	-	0	1	1	-	0	0	0	2	OF	0
TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]																						

A. CONDITION PRIOR TO EVENT

MODE 1 -Power Operations RX Power 100% RCS [AB] Temperature/Pressure 558.5°F/2235 psig

B. DESCRIPTION OF EVENT

On October 29, 1994 for the purpose of collecting data for the Degraded Voltage Calculation Program, an attempt was made to start the "C" Emergency Diesel Generator (EDG)[EK] Vent Fan (Unit 2 feed) so that current and voltage readings could be taken. The vent fan control switch for the feed from Unit 1 was placed in pull-to-lock (PTL) (as stated on the Main Control Board (MCB) placard) and the control switch for Unit 2 feed was placed in the closed position. The fan did not start. The voltmeter and current probes used as test equipment that had been connected to the circuit for monitoring purposes were disconnected. The operator attempted to start the fan without test equipment attached to the circuit. The fan did not start again. A local operator was dispatched to reset the Motor Control Center (MCC) (Unit 2 feed) thermals and another attempt to start the fan was unsuccessful. The operator took the vent fan (Unit 1 feed) out of PTL and verified the fan would start from Unit 1.

A Problem Identification Form was written to document the failure and an operability determination was performed. The operability assessment of the situation was clouded by the fact that the fan power supply worked from Unit 1; and the Zion Operability Determination Manuals (ZODM), did not address Dual Unit Vent Fan Power Requirements for the "0" EDG operability. The primary feed to the "0" EDG vent fan is from Unit 1. The unit 2 feed has always been considered to be the back-up power in the event that Unit 1 feed is lost. A review by appropriate station personnel at the time of the event determined the "0" EDG was operable.

Due to the assessment of this not being an operability concern, the priority to find the cause of this event was not placed in its proper perspective. The circuit was initially discussed by System Engineers who were also not familiar with the Dual Unit Loss Of Offsite Power (LOOP) considerations. The Dual Unit LOOP with concurrent safety injection is not explicitly stated in the UFSAR as design basis. No one recognized the operability issue for Unit 2. As part of the investigation into the cause of this event, several days transpired before it was realized that the fan was inoperable for Unit 2 only. On November 10, 1994, the "0" EDG was declared inoperable. The control room Unit 2 feed control switch was found to have a broken contact and the switch was replaced on November 11, 1994 at 0230.

On October 31, 1994 at 0922, 2A EDG was declared inoperable due to a light bulb failure, causing a small local panel fire. The damage was inspected and found to be limited to the light bulb socket and minor wiring. Based on this inspection it was determined by System Engineering that the EDG was available and would start automatically if called upon. Therefore a decision was made to utilize a human Out-Of-Service (OOS) and minimize the time frame that the EDG would be unavailable. The total time that the 2A EDG was unavailable for the human OOS and repairs to be completed was approximately five hours. Therefore, the plant was placed outside its design basis with two EDG's unavailable for a period of approximately five hours. Periodic Test (PT)-11-2A was completed satisfactorily, and the "2A" EDG was returned to service at 0505 on November 1, 1994.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION											Form Rev 3.0											
FACILITY NAME (1)	DOCKET NUMBER (2)				LER NUMBER (6)						Page (3)											
					Year	/// /// ///	Sequential Number	/// /// ///	Revision Number													
Zion Unit 2	0	5	0	0	0	3	0	4	9	4	-	0	1	1	-	0	0	0	3	OF	0	4
TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]																						

B. DESCRIPTION OF EVENT (Continued)

The two inoperable EDG's were not recognized at the time due to the assessment of "0" EDG on October 29, 1994. It was not until the investigation of "0" EDG inoperability that log searches uncovered the "2A" EDG issue. An ENS notification call was made at 1220 on December 6, 1994.

A planned maintenance activity on 2B Safety Injection (SI) [BQ] pump proceeded due to lack of identification that the "0" EDG was inoperable. The pump was taken out of service at 0550 on October 31, 1994. The 2B SI pump was returned to service at 0400 on November 1, 1994. "0" EDG is the emergency power supply the "2A" Safety Injection Pump. Therefore, the 2A and 2B Safety Injection pumps were simultaneously unavailable for approximately 22 hours and 10 minutes.

C. APPARENT CAUSE OF EVENT

This event was caused by management deficiency. The lack of documentation for the design basis accident was "a total loss of offsite power concurrent with an SI", as opposed to "a single unit loss of offsite power concurrent with an SI" caused the station to inadequately assess this event. This initial assessment failed to properly identify that the "0" EDG was inoperable at the time of this control switch malfunction.

The Unit 2 control switch (W-2) was found to have a contact broken loose inside the switch. This contact, F6-F7 (CTO), is normally closed in all positions except pull-to-lock. The internal damage to the switch indicates that the switch was broken when it was being returned from the pull-to-lock position.

D. SAFETY ANALYSIS OF EVENT

"0" EDG would start from either Unit, but its room vent fan would only start from Unit 1. Without a Safety Injection, a Dual Unit LOOP would have resulted in the "0" EDG Vent Fan being powered from Unit 1. A Safety Injection would have resulted in the "0" EDG Vent Fan being powered from Unit 1. Only if a Dual Unit LOOP and a Unit 2 SI occurred then the fan would not start. If the EDG started and ran without room ventilation, the room temperature could exceed the design limit of 115°F within a short time frame. Operating procedures and training address compensatory actions to respond to a running without room ventilation available. The current ZODM requires the EDG room vent fan to be operable to consider the EDG operable.

"2A" EDG inoperable concurrent with "0" EDG inoperable chiefly affected emergency power supplies to both SI pumps during the accident being considered. No SI pump would be available. However, a centrifugal charging pump and a Residual Heat Removal pump would be available to provide long term cooling to the core. Planned maintenance on 2B SI pump would have resulted in a similar scenario as described above. Due to the short time frame of 2A EDG and 2B SI pump, unavailability, the safety significance was minimal.

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

E. CORRECTIVE ACTIONS

The W-2 switch was replaced and tested satisfactory using TSGP-107 (Parallel contact study test). This test was able to verify operability from both Units.

Action needed to prevent recurrence:

1. The ZODM will be updated to reflect design basis information.
2. System Engineering will provide guidance to Operations and Maintenance (for anyone who operates W-2 switches) regarding proper actions to be taken when difficult W-2 switch manipulation is encountered.
3. Upon return to service of this circuit, feeds from both Units will be tested and verified to perform properly. This would apply to any and all circuits that have alternate feeds from either of two or more sources. Appropriate procedures will be revised to ensure proper and timely testing of these alternate feed type configurations. Any further design basis deficiencies will be documented in a supplemental report.
4. Design Engineering will review the UFSAR to determine if further clarification is required for design basis.
5. Design Engineering will review the training regarding design basis changes or design basis document changes.
6. System Engineering will review post maintenance testing requirements for W-2 switch manipulation.

F. PREVIOUS EVENTS

A violation with Civil Penalty was issued for a 1989 event in which the station failed to consider the impact of EDG vent fan inoperability on DG operability.

At the time of that event, the station did not recognize that the vent fans were required for an EDG to be operable. This was not the case for the event described in this LER. The corrective actions from the violation would not have prevented this event.

G. COMPONENT FAILURE DATA

Westinghouse type W-2 switch model number 508A162G01.