NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Zion Station, Unit 1	0 5 0 0 0 2 9 5	1 OF 0 2

TITLE (4)

Reactor Trip and Inadvertent Engineered Safety Features Actuation

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 6	0 7	8 5	8 5	-	0 1 9	-	0 1	0 9	0 9	8 5		0 5 0 0 0
												0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
5	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0 1 0 0	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	TELEPHONE NUMBER
Michael Lesnet	AREA CODE 3 1 2 7 4 6 - 2 0 8 4

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
B	J E	I M C D	H 0 2 1	Y							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 9	3 0	8 5

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

On 6-7-85 Unit 1 was in cold shutdown and the reactor trip breakers closed and the main steam isolation valves open for testing. In order to investigate a noise problem, the fuses were pulled and then replaced on each of the two source range channels, one channel at a time. This resulted in a reactor trip and an unexpected closure of the main steam isolation valves. While unplanned, the reactor trip had little plant significance since the plant was subcritical and in cold shut down. As a result of this reactor trip, trouble shooting techniques have been changed. Further testing showed that any reactor trip resulted in a high steam flow safeguards actuation and would close all main steam isolation valves. When the reactor trip breakers opened, the safety injection interlock (P4) contacts closed and a spike was seen on the input and output of Turbine Impulse pressure summator 1PM505B. The summator, which provides a reference signal to the high steam flow safeguards comparator, spiked low and caused the main steam isolation valves to close and the safeguards actuation. The module was replaced and testing showed that the spike could no longer be seen on the output of the summator.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Zion Station Unit 1	0 5 0 0 0 2 9 5	8 5	— 0 1 9	— 0 1	0 2 OF 0 2

TEXT (If more space is required, use additional NRC Form 366A's) (17)

On June 7, 1985, at 1150 hours, Unit 1 was in cold shutdown with the reactor trip breakers closed and the main steam isolation valves open for testing. In order to investigate a noise problem, the fuses were pulled and then replaced on each of the two source range channels, one channel at a time . This gave a reactor trip, and an unexpected closure of two main steam isolation valves. Further testing showed that any reactor trip resulted in a high steam flow safeguard actuation on staem generators A and D and that all 4 main steam isolation valves would close.

Removal of the source range instrument fuses created a source range high level trip, which unintentionally cycled the reactor trip breakers. Pulling source range instrument fuses is a routine troubleshooting maintenance activity. A trip signal will be generated unless the channel is placed in bypass. If control fuses are pulled a trip signal will be generated even in the bypass mode. In the future, the reactor trip breakers should be open during source range troubleshooting unless conditions will not permit. At that time the trip bypass function should be used. This will prevent any unnecessary challenges of the trip breaker. This practice has been discussed with the appropriate personnel and will be instituted for source range troubleshooting. Removal of the source range instrument fuses without the drawer in bypass created a source range high level reactor trip.

An investigation revealed that the reactor trip breakers had opened and caused the safety injection interlock circuitry (P4) contacts to close in relay module 1PM505Q in the Turbine impluse pressure loop. When these contacts closed a 240 MV spike was seen on the input and output of Summator 1PM505B. The summator, which supplies a reference signal to the high steam flow safeguards comparators, spiked low, causing the main steam isolation valves to shut and a high steam flow with low Tavg/ low steam pressure safeguards actuation signal.

The main steam isolation valves were tested several times and it was found that all 4 of the valves closed when a trip signal was received.

The cause of the reactor trip was due to removal of the source range fuses during the troubleshooting of the source range instruments. Such troubleshooting will not be done in the future without opening the reactor trip breakers first. The closure of the MSIV's was due to the failure of Summator 1PM505B. The summator was replaced and testing showed that the large spike could no longer be seen on the output of the module. A contributing factor was the unusual plant lineup with the reactor trip breakers closed and the main steam isolation valves open. The health and safety of the public was not affected.

The investigation into the root cause of only 2 of the isolation valves closing will be detailed in a supplemental report.

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Zion Generating Station
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Zion, Illinois 60099
Telephone 312/746-2084

September 9, 1985

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

References: 10CFR50

Dear Sir:

The enclosed Licensee Event Report from Zion Generating Station is being trar smitted to you as a follow-up to clarify the previous revision.

This report is number 85-019-01, Docket No. 50-295/DPR-39.

Very truly yours,

T. A. Rieck

for K. L. Graesser
Station Manager
Zion Generating Station

KLG/rmm

Enclosure: Licensee Event Report No. 85-019-01

Attachment

cc: J. G. Keppler, NRC Region III Administrator
M. Holzmer, NRC Resident Inspector
INPO Record Center
CECo Distribution List

IE22
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