

LICENSEE EVENT REPORT (LER)														
Facility Name (1) Zion, Unit 2										Docket Number (2) 0 5 0 0 0 3 0 4			Page (3) 1 of 0 3	
Title (4) Nuclear Station Operator failure to log delta I with Nuclear Instrumentation Channel in Test.														
Event Date (5)			LER Number (6)				Report Date (7)			Other Facilities Involved (8) N/A				
Month	Day	Year	Year	/// Sequential Number	/// Revision Number	Month	Day	Year	Facility Names		Docket Number(s)			
0 1	0 8	8 8	8 8	0 0 1	0 1	0 7	1 5	8 8			0 5 0 0 0			
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)											
POWER LEVEL (10) 0 9 9			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)		Other (Specify in Abstract below and in Text)			
			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)							
			20.405(a)(1)(iii) X		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 Eric Stevens, Technical Staff engineer x307										TELEPHONE NUMBER 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	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS					
SUPPLEMENTAL REPORT EXPECTED (14)										Expected Submission Date (15)		Month Day Year		
Yes (If yes, complete EXPECTED SUBMISSION DATE) X NO														
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)														

The delta-I logging program on the Unit 2 process computer was automatically deactivated at 2014 January 8, 1988 during channel functional tests on power range channel 41 and delta-I was not manually logged until 2300. Technical Specification 4.2.2.A.5 requires that delta-I be manually logged until the delta-I program is restored. The event ended at 2300 when the next shift Nuclear Station Operator (NSO) acknowledged the alarm indications and began to manually log delta-I. The delta-I program was restored at 2330 on January 8, 1988, terminating the need for the manual log. The missed surveillance of logging delta-I is a result of personnel error resulting from the NSO's misconception that the channel test pre-empted the requirement to manually log delta-I. Unit 2 was at 99.4% power and the delta-I values stayed within the operating band throughout the incident.

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

A. PLANT CONDITIONS PRIOR TO EVENT:

MODE 1 - full power RX Power 99.4 RCS [AB] Temperature/Pressure 558 °F/ 2234.6 psig

B. DESCRIPTION OF EVENT:

On January 8, 1988, Instrument Maintenance performed a Nuclear Instrumentation System (NIS) [IG] power range functional test on channel 41 of Unit 2 per Instrument Maintenance procedure 2N-41 E. At 2014 the NIS computer points for channel 41 were placed in scan mode for an on-line section of the test which caused the delta-I program to deactivate the delta-I calculation as it sensed a deviation between the 4 delta-I channels. This is an expected consequence of the procedure and is not considered an anomalous event. Accordingly the control room alarm typer printed "DELTA FLUX - QUESTIONABLE CALCULATION - HISTORY TABLES WILL NOT BE UPDATED BEGIN MANUAL LOGGING OF DELTA I per PT-14A". The Nuclear Station Operator (NSO) did not acknowledge this message on the alarm typer. With the process computer delta-I program not actively logging delta-I, Technical Specification 4.2.2.A.5 requires hourly manual logging of delta-I for the first 24 hours and then every half hour thereafter. The control room display monitoring system provided an alternate indication that the delta-I program was offline as it displayed six red X's where the usual delta-I value is given. The NSO noted this condition and was aware of the delta-I logging Technical Specification requirements.

The delta-I program has provisions for using three channels when one is in test but part of the procedure requires that the computer points for the channel be returned to scan to verify an axial offset and other computer values against corresponding detector current values. In the functional procedure 2N-41 E the Instrumentation Mechanic (IM) manually sets the power range channel currents to predetermined values which correspond to an axial offset of zero for five simulated power levels of 0, 30, 60, 90, and 120 percent. The computer processes signals proportional to these currents to yield axial offset values which provide verification of the channel and computer functionality. The computer utilizes the currents as if they were representing actual core conditions. When any of the four channels (in this case the channel in test) varies by more than 2 percent from the average of the other 3 channels, the delta-I program internally disables the delta-I calculation and the logging of the delta-I values.

The NSO is responsible for reactivating the delta-I program after the condition causing the "questionable calculation" is rectified by requesting the Shift Engineer to reset the program. It is the NSO's option to either log delta-I manually or see that the delta-I program is restored so that the Technical Specification requirement is met. The alarm typer called for NSO action on the matter once per minute throughout the event. The event ended at 2300 when the oncoming NSO acknowledged that delta-I was not being logged either by the computer or manually and starting logging delta-I per PT-14A. The Shift Engineer reset the delta-I program at 2330 on January 8, 1988 to restore computer logging of delta-I.

C. CAUSE OF EVENT:

The primary cause of the event is the licensed NSO failure to respond to control room indication. The NSO failed to acknowledge the questionable computer calculation of the delta-I condition and either begin manual logging of delta-I or have the delta-I program restored when feasible. He took neither action for the remainder of his shift, approximately 2 hours and 45 minutes. The reason he took no action was his belief that while the IM was performing the channel 41 functional test, delta I manual surveillance was not required.

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C. CAUSE OF EVENT: (continued)

Usually the IM's finish simulating the five power levels and complete the procedure within an hour. The Shift Engineer then resets the program well before the NSO would be required to log delta-I for the first hour. The NSO grew accustomed to this pattern of waiting for the IM to finish before resetting the delta-I program. This particular test took longer than usual since one IM was performing it rather than two. The NSO assumed that the channel calibration had to be completed prior to resetting the delta I program, and that while the IM's were performing the NIS functional procedure, the Tech Spec did not apply. The NSO also had limited knowledge of how the IM test procedure was affecting the unit's delta-I program.

D. ANALYSIS OF EVENT:

Unit Two remained at 99% power throughout the event. Process computer data for delta I was retrieved from this time period, and is shown on figure 1. It shows that delta-I increased slightly from approximately -0.6% to -0.4% from the beginning to the end of the event. The allowable delta-I band for Unit 2 at 99% power is between -7.3% and 5.7%. There is no significant safety impact from this event.

E. CORRECTIVE ACTIONS:

As a short term corrective action, the involved NSO will read a program description of the delta I program to better understand what the program does and how it is affected by IM testing. Three long term actions will be taken to prevent recurrence. Technical Staff will investigate changes to the IM calibration procedure to have the IM toggle channel currents into scan mode while the channel is still in test. This would enable the IM to complete the procedure without interrupting automatic logging of delta I. This may necessitate changes to the process computer program to allow for computational analysis of a channel while remaining in test mode.

The IM calibration procedure will be revised to add a Shift Supervisor and NSO signoff, cautioning him on the potential for additional Technical Specification surveillance requirements associated with the NIS channel calibration.

Operator training will be conducted on the IM calibration procedure revision concerning the Tech Spec requirements, Shift Supervisor signature and NSO signature.

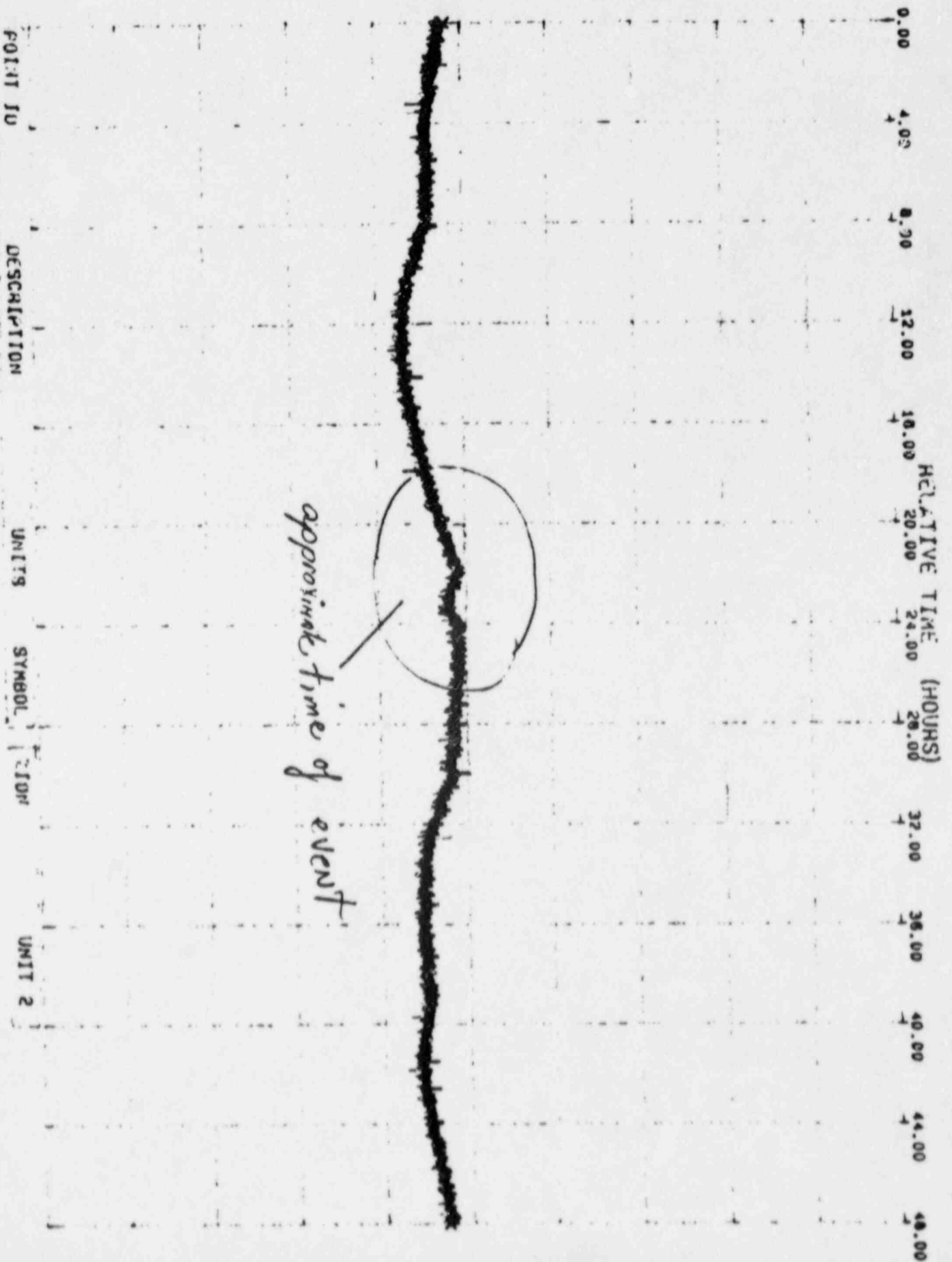
During the investigation of this event, it was noticed that the Quadrant Power Tilt Ratio had not been determined hourly while the excore channel was inoperable during IM calibration, as required by Technical Specification 4.2.2.C.2. The cause of this additional missed surveillance is that Operating personnel assumed that the surveillance requirements for an inoperable excore channel did not apply during IM calibration. This Technical Specification and its applicability during IM testing will be covered in the Operator training discussed above. As an immediate corrective action, Standing Order 88-02 was issued on January 28, 1988, stating the surveillance requirements of Technical Specification 4.2.2.C.2 for an inoperable excore channel, and explicitly stating that these requirements apply when a power range excore channel is inoperable due to IM calibration or maintenance which affects operability.

F. PREVIOUS OCCURRENCES:

This same Tech Spec violation occurred in LER 84-027. At that time, the corrective actions consisted of training for the NSO's, clearer alarms on the control room monitor, and automatic messages on the control room alarm typer.

G. COMPONENT FAILURE DATA:

NONE



U6013 DELTA FLUX CHANNEL 42
 U6014 DELTA FLUX CHANNEL 43
 U6015 DELTA FLUX CHANNEL 44

A
 +
 X

Figure 1: Delta I



Commonwealth Edison
Zion Generating Station
101 Shiloh Blvd.
Zion, Illinois 60099
Telephone 312/746-2084

July 21, 1988

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

Dear Sir:

The enclosed Revised Licensee Event Report number 83-01-01, Docket No. 50-304/DPR-48 from Zion Generating Station is being transmitted to you to clarify the corrective actions.

Very truly yours,

G. J. Pliml
Station Manager
Zion Generating Station

GJP/am

Enclosure: Licensee Event Report

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

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