

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) D. C. Cook Nuclear Plant, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 1 1 6										PAGE (3) 1 OF 0 4																																			
TITLE (4) ESF Actuation (Inadvertent Opening of Reactor Trip Breakers) Due to the Failure of a Source Range Nuclear Instrumentation Detector																																																							
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 3			0 3			8 7			8 7			0 0			1			0 0			0 4			0 1			8 7																0 5 0 0 0												
OPERATING MODE (9) 3									THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																														
POWER LEVEL (10) 0 0 0									20.402(b)									20.405(c)									<input checked="" type="checkbox"/> 50.73(a)(2)(iv)									73.71(b)																			
									20.405(a)(1)(i)									50.38(c)(1)									50.73(a)(2)(v)									73.71(c)																			
									20.405(a)(1)(ii)									50.38(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)																												
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LICENSEE CONTACT FOR THIS LER (12)																																																							
NAME A. A. Blind - Assistant Plant Manager																				TELEPHONE NUMBER AREA CODE 6 1 6 4 6 5 - 5 9 0 1 1																																			
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																																			
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SUPPLEMENTAL REPORT EXPECTED (14)																				EXPECTED SUBMISSION DATE (15)										MONTH DAY YEAR																									
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)																				<input checked="" type="checkbox"/> NO																																			

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

On March 3, 1987, at 1511 hours, a spurious signal from a source range instrument channel (N-31) resulted in an Engineered Safety Features (ESF) actuation (inadvertent opening of the reactor trip breakers). The reactor was subcritical at the time. The automatic ESF responses were verified, all equipment functioned as designed.

Following investigation, and review of post actuation data, it was concluded that the signal from N-31 was spurious and due to a malfunction of the detector, and not an increase in the core neutron level.

The source range instrument detector was removed, replaced and declared operable on March 14, 1987 at 2223 hours.

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

Conditions Prior to Event

Unit 2 in Mode 3 (Hot Standby), at 1.0 E4 cps with a unit shutdown in progress.

Description of Event

On March 3, 1987, at 1511 hours, a spurious signal from a source range instrument channel (N-31) (EIIS/CHA) resulted in an Engineered Safety Features (ESF) actuation [inadvertent opening of the reactor trip breakers (EIIS/BKR)]. The reactor was subcritical at the time with all control rod banks (EIIS/ROD), and one shutdown rod bank (D), fully inserted. Another shutdown rod bank (C) was being inserted when the event occurred. Operations personnel immediately implemented Emergency Operating Procedure 1 OHP 4023.E-0 to verify proper response of the automatic protection system (EIIS:JC) and to assess plant conditions for initiating appropriate recovery actions. The N-31 source range instrument channel was returned to service on March 14, 1987 at 2223 hours following detector replacement.

The automatic ESF responses were verified, all equipment functioned as designed. However, since the unit was in Hot Standby and shutdown; the main feedwater pumps (EIIS/P) were previously removed from service, the turbine/generator (EIIS/TRB-GEN) was in a tripped condition, no steam dump/pressure relief was necessary, and the auxiliary feedwater pumps were in service.

System/Equipment responses that did occur included; the opening of the reactor trip breakers and the insertion of the shutdown rods remaining to be inserted. Reactor coolant pump (EIIS/P) operation was maintained throughout the event and no abnormal occurrences were noted.

There were no structures, components, or systems inoperable at the start of this event which could have contributed to this ESF actuation, with the exception of the subject source range malfunction.

Cause of Event

Following investigation, and review of post actuation data, it was concluded that the signal from N-31 was spurious and due to a malfunction of the detector (EIIS/DET) and not an increase in the core neutron level.

Current characteristics curves were obtained for the detector and, based on the Westinghouse Manual, it was determined that the detector failed due to air in-leakage.

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Analysis of Event

This event is being reported per the requirements of 10CFR50.73 (a)(2)(IV), as an event that resulted in automatic actuation of any Engineered Safety Feature including the Reactor Protection System.

The source range instrumentation monitors the core neutron flux level during reactor shutdown and the initial stages of reactor startup. The source range channels provide reactor protection by initiating a reactor trip at a relatively low neutron count rate to terminate a low power/high startup rate accident. The actuation coincidence is 1 of 2 channels > 1.0 E5 cps. During reactor startup the source range trips are blocked above permissive P-6 (approximately 6.0 E-11 amps on the intermediate range nuclear instrumentation). The source range channel protection is automatically reinstated when reactor power decreases below P-6 during shutdowns. Prior to this event, both source range channels had re-energized when reactor power had decreased below P-6.

Since a low power/high startup rate condition did not exist during this event, and all reactor Protection systems functioned as designed upon the receipt of the actuation signal, it has been concluded that the health and safety of the public were not jeopardized.

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Corrective Actions

The source range instrument detector was removed, replaced and declared operable on March 14, 1987 at 2223 hours.

Failed Component Identification

Source Range Nuclear Instrumentation Detector (plant designation N-31).

Manufacturer: Westinghouse

Model Number: WL23706

EIIS:DET

Previous Similar Events

No previous events have occurred.

