

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Susquehanna Steam Electric Station - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 8 8				PAGE (3) 1 OF 0 3										
TITLE (4) Core Alterations Performed with SRM Channel 'A' Inoperable.																								
EVENT DATE (5)			LER NUMBER (8)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (9)														
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES				DOCKET NUMBER(S)											
0	4	1	0	8	4	8	4	0	0	2	0	1	1	2	6	8	5	0	5	0	0	0		
OPERATING MODE (6)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																						
5		20.402(b)				20.406(e)				50.73(a)(2)(iv)				73.71(b)										
POWER LEVEL (10)		20.406(a)(1)(i)				50.30(e)(1)				50.73(a)(2)(v)				73.71(e)										
0		20.406(a)(1)(ii)				50.36(e)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 356A)										
		20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)														
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)														
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)														
LICENSEE CONTACT FOR THIS LER (12)																								
NAME T.N. Creasy										TELEPHONE NUMBER														
										AREA CODE														
										7 1 1 7 5 1 4 2 1 - 3 1 2 1 4 2														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS														
A	I	G	C	B	L	1	G	O	6	1	6	N												
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)

At 0145 hours on 4/11/84 during the initial fuel load of Unit 2, a Plant Control Operator (PCO) discovered Source Range Monitor (SRM) Channel 'A', one of four Source Range Monitoring Channels for the core, in bypass (i.e., Source range indication was being received from the detectors by the channel, but the reactor protection system scram function receiving signals from SRM Channel 'A' detector was inhibited). A Limiting Condition for Operation (LCO) precluding any core alterations was entered in accordance with Technical Specification Section 3.9.2(c). A review of activities performed on 4/10/84 indicated Source Range Monitor 'A' was placed in bypass at 1245 hours on 4/10/84 while attempting to transfer core neutron monitoring from Fuel Load Chamber (FLC) 'A' to Source Range Detector 'A'. By 1505 technicians determined Source Range Detector 'A' could not be calibrated due to a faulty cable between the detector and its preamplifier; FLC 'A' was reconnected to the monitor of Source Range Channel 'A'. Instrument response verification was completed by 1615 hours; the Channel 'A' bypass switch, however, was not restored to its normal position. At 1830 hours the PCO performed surveillance SO-200-006 "Shiftly Surveillance Operating Log" and noted the 'A' SRM was bypassed but came to the conclusion that 'A' FLC was in service. While Channel 'A' remained in bypass, one watch relief and one shift turnover occurred at 1900 and 2330 hours, respectively. Following the discovery, at 0147 hours on 4/11/84 core alterations were halted. The Channel 'A' SRM bypass was removed, the applicable Technical Specification reviewed, the SRM/FLC status was reviewed and the station's duty manager notified. Fuel loading again commenced at 0240 hours. During the event seventeen (17) non-coincident scram functions remained available for reactor protection. This occurrence did not constitute a loss of the safety functions required to shut down the reactor. Sufficient protection and administrative controls existed to prevent and/or mitigate any serious event. Therefore, the health and safety of the public was not affected.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Susquehanna Steam Electric Station
Unit 2

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

0 5 0 0 0 3 8 8 8 4 - 0 0 2 - 0 1 0 2 OF 0 3

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

At 0145 hours on 4/11/84 during the initial fuel load of Unit 2, a Plant Control Operator (PCO) discovered Source Range Monitor (SRM) Channel 'A', one of four Source Range Monitoring Channels for the core, in bypass (i.e., Source range indication was being received from the detector by the channel, but the reactor protection system scram function receiving signals from SRM Channel 'A' detector were inhibited). A Limiting Condition for Operation (LCO) precluding any core alterations was entered in accordance with Technical Specification Section 3.9.2(c). A review of activities performed on 4/10/84 indicated Source Range Monitor 'A' was placed in bypass at 1245 hours on 4/10/84 while attempting to transfer core neutron monitoring from Fuel Load Chamber (FLC) 'A' to Source Range Detector 'A' (the transfer of an FLC to a Source Detector occurred five times prior to the event; the SRM's were bypassed approximately thirty (30) times during fuel load for FLC moves). By 1505 technicians determined Source Range Detector 'A' could not be calibrated due to a faulty cable between the detector and its preamplifier; FLC 'A' was reconnected to the monitor of Source Range Channel 'A'. Instrument response verification was completed by 1615 hours; the Channel 'A' bypass switch, however, was not restored to its normal position.

Although indication and response were still received in the Control Room, with Channel 'A' bypassed, the trip function for that channel remained out of service. At 1830 hours the PCO performed surveillance SO-200-006 "Shiftly Surveillance Operating Log" and noted the 'A' SRM was bypassed but came to the conclusion that 'A' FLC was in service, not realizing that 'A' FLC and the 'A' Source Range Detector was feeding the same trip function that had been bypassed. While Channel 'A' remained in bypass, one watch relief and one shift turnover occurred at 1900 and 2330 hours, respectively. Neither the day shift System and Equipment Status Sheets, completed at 1245 hours, nor the System and Equipment Status Sheets completed during the 1500-2300 hour shift contained indication that the 'A' SRM/FLC was bypassed. Following the discovery, at 0147 hours on 4/11/84 core alterations were halted, the Channel 'A' SRM bypass was removed, the applicable Technical Specification reviewed, the SRM/FLC status was reviewed and the station's duty manager notified. Fuel loading again commenced at 0240 hours.

During the event, SRM 'A' was inoperable for nine (9) hours during which time core alterations were performed. Specifically, two control rods were withdrawn individually a total of six (6) times to perform startup tests and eleven (11) fuel bundles were loaded into consecutive quarters of the core in a clockwise fashion.

Although the Channel 'A' SRM upscale scram function was bypassed during this event a total of seventeen (17) non-coincident scram functions remained; for the Source Range Monitors (3), the Intermediate Range Monitor (8) and the Average Power Range Monitor (6). Noncoincident scram functions were operable since the shorting links requiring channel coincidence for a scram were removed, allowing any single neutron monitoring system scram signal to cause a reactor scram. Source Range Monitoring Channels 'B', 'C' and 'D' remained in service with scram setpoints set at 1×10^5 counts per second (cps). Intermediate Range Monitoring Channels, two (2) each in core quadrants A thru D were operable with a setpoint of 120/125% of full scale or at an approximate

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APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)		
Susquehanna Steam Electric Station Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

equivalent of 10^8 cps. Six (6) Average Power Range Monitoring Channels were available to provide independent trips should those for the source and intermediate range not actuate.

Also during this event the one-rod-out-interlock with the reactor mode switch locked in the "Refuel" position was operable and would have prevented the withdrawal of more than one control rod.

Core alterations performed during the event, per procedure, were monitored by the reactor operator via the SRM/FLC indication in the control room. Upon indication of any unsuspected subcritical multiplication, the reactor would be scrammed and core alterations suspended. No significant changes in the count rate, verified from data recorded during the event, was observed.

Furthermore, a plot of the average inverse count rate maintained during fuel loading showed the core not to be near the predicted critical configuration.

Actions to prevent recurrence are as follows:

- (1) A review of the event with Shift Supervision and Plant Control Operators.
- (2) Core alterations prohibited with less than 4 SRM's operable, unless Licensed Operator confirms required 2 SRM's are operable each time a new core quadrant is entered during core alterations.
- (3) On shift operators during the event were disciplined.
- (4) Plant management assigned to review logs, panels, plant status and shift turnover practices.
- (5) Shift turnover practices revised requiring oncoming and offgoing panel walkdown by operators and subsequent walkdowns accompanied by shift supervision.
- (6) Watch standing practices have been reviewed by senior management personnel from other facilities, and significant recommendations have been or are currently being implemented.

The occurrence of this event did not constitute a loss of the safety functions required to shutdown the reactor. Sufficient protective and administrative controls existed to prevent and/or mitigate any serious event. Therefore, the health and safety of the public was not affected.

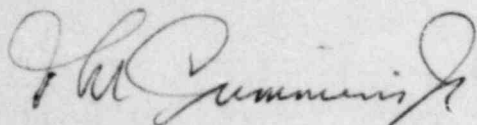
November 26, 1985

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 84-002-01
ER 100450 FILE 841-23
PLAS- 133

Docket No. 50-388
License No. NPF-22

Attached is updated Licensee Event Report 84-002-01. This event was determined reportable per 10CFR50.73(a)(2)(i), in that core alterations were performed during Unit 2 fueling with less than the minimum required Source Range Monitors operational in accordance with Section 3.9.2 of the Technical Specifications.



T.M. Crimmins, Jr.
Superintendent of Plant-Susquehanna

TNC/pjg

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