Update Report - Previous Report Date May 6, 1983

NRC FORM 366 (12-81) 10 CFR 50

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

APPROVED BY OMB 3150-0011

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | LICENSEE CODE: P A S E S 1 (2) | LICENSE NUMBER: 0 0 - 0 0 0 0 0 - 0 0 (3) | LICENSE TYPE: 4 1 1 1 1 (4) | CAT (5)

CON'T

0 1 | REPORT SOURCE: L (6) | DOCKET NUMBER: 0 5 0 0 0 3 8 7 (7) | EVENT DATE: 0 4 0 7 8 3 (8) | REPORT DATE: 0 7 2 6 8 5 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During the performance of a startup test to determine the capability of the shut-
0 3 down cooling mode of RHR, the shutdown cooling loop in operation isolated. Con-
0 4 currently, excessive vessel and primary coolant cooldown rates occurred. Engin-
0 5 eering analysis has concluded that the effects of the cooldown did not impair the
0 6 structural integrity of the reactor coolant system. The use of RWCU and subse-
0 7 quently, the "A" loop of RHR in shutdown cooling, prevented stratification in the
0 8 vessel.

0 9 | SYSTEM CODE: C F (11) | CAUSE CODE: B (12) | CAUSE SUBCODE: A (13) | COMPONENT CODE: V A L V E X (14) | COMP. SUBCODE: F (15) | VALVE SUBCODE: G (16)

(17) LER/RO REPORT NUMBER: EVENT YEAR 8 3 | — | SEQUENTIAL REPORT NO. 0 5 6 | / | OCCURRENCE CODE 0 3 | REPORT TYPE X | — | REVISION NO. 1

ACTION TAKEN: C (18) | FUTURE ACTION: Z (19) | EFFECT ON PLANT: Z (20) | SHUTDOWN METHOD: Z (21) | HOURS (22): 0 0 0 0 | ATTACHMENT SUBMITTED: Y (23) | NPRD-4 FORM SUB.: N (24) | PRIME COMP. SUPPLIER: N (25) | COMPONENT MANUFACTURER (26): A 3 9 1

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 These events were caused by a complex series of interactions. Procedural changes
1 1 have been made and a system modification has been completed. The modification in-
1 2 stalled RHR valves with throttling characteristics able to more closely control
1 3 flow through the RHR heat exchanger.
1 4

1 5 | FACILITY STATUS: B (28) | % POWER: 0 0 0 (29) | OTHER STATUS (30): NA | METHOD OF DISCOVERY: C (31) | DISCOVERY DESCRIPTION (32): Operator Observation

1 6 | ACTIVITY RELEASED: Z (33) | CONTENT OF RELEASE: Z (34) | AMOUNT OF ACTIVITY (35): NA | LOCATION OF RELEASE (36): NA

1 7 | PERSONNEL EXPOSURES NUMBER: 0 0 0 (37) | TYPE: Z (38) | DESCRIPTION (39): NA

1 8 | PERSONNEL INJURIES NUMBER: 0 0 0 (40) | DESCRIPTION (41): NA

1 9 | LOSS OF OR DAMAGE TO FACILITY (43) TYPE: Z (42) | DESCRIPTION: NA

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2 0 | PUBLICITY ISSUED: N (44) | DESCRIPTION (45): NA | NRC USE ONLY

NAME OF PREPARER L.A. Kuczynski PHONE (717)542-3759

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LER 83-056/03X-1

A thorough review was performed of the events as described on the following time line. Operations and technical personnel identified main throublespots, and devised recommendations to correct them.

Present RHR system design requires 10,000 gpm through the heat exchanger to protect the physical integrity of the heat exchanger outlet valve. Lack of this throttling capability jeopardizes the allowed cooldown rate when transferring RHR shutdown cooling flow from bypassing the heat exchanger to establishing flow through the heat exchanger. Valves with the requisite throttling characteristics have replaced the originally installed valves.

Corrective actions also include splitting the present RHR operating procedure into six separate procedures to facilitate their proper use. The shutdown cooling mode procedure has also been revised for clarification.

EVENT TIME LINE

PRIOR TO START OF TEST ON 4/7/83	Reactor temperature/pressure was maintained using shutdown cooling by valving in the RHR heat exchanger for approximately 5 minutes every hour. The heat exchanger was valved in by alternately opening and closing either the heat exchanger inlet or discharge valve (F047 or F003). The heat exchanger bypass valve F048 always remained full open.
0256	With reactor vessel level at 35", the startup test began. The heat exchanger had been isolated for approximately one hour before the start of the test with RHR SW flow at 5000 gpm and spray pond temperature ~57°F. The RWCU system was in service with the heat exchangers isolated, then all flow in RHR Loop A was directed through the heat exchanger (10,000 gpm). The heat exchanger bypass valve was fully closed approximately 3 minutes after the start of the test.
0304	When a 60°F temperature drop in the suction line of the 'A' recirc loop was approached, the startup test was aborted by opening the heat exchanger bypass valve and isolating the heat exchanger at the same time. By the time this was accomplished, the temperature drop reached approximately 80° - 90°F. Reactor level was dropping due to shrinkage. CRD flow was increased from 42 to 62 gpm. Temperatures were being monitored on the CRT. The recirc discharge valve was closed with the discharge bypass valve and recirc suction valve open.
0306	Reactor scrammed on low level (15"). (Note: This was an RPS actuation only. Reactor was not critical.) Shutdown cooling isolated, RHR pump 'A' tripped. Level restoration

0306 (continued)	was attempted by opening condensate tranfer valve but a manual normally closed valve downstream prevented this. Level was restored with CRD flow.
0327	NRC ENS notified
0336	RHR loops 'A' & 'B' filled & vented.
0435	Opened inboard MSIV's to stop the increasing ΔT in vessel. CRD flow was reduced to 42 gpm and RWCU was established to normal lineup, stopping the stratificaiton.
0444	Restarted 'A' RHR pump in shutdown cooling lineup with reactor level at 35". The F017 valve was not opened far enough and the min flow valve opened. Operator tried to close valve but did not hold in closed position. Valve cycled open and closed in~1 minute with flow at 4000 gpm. Reactor scrammed on low level (~15").
0450	The F008, F009, F015 valves were opened and the F017 valve cracked to allow level to be increased to 54" using condensate transfer (the manual normally closed valve downstream of the condensate transfer valve was opened after prior scram). Operator observed a temperature decrease from 290°F to 170°F in minutes. The F008 and 017 valves were shut immediately. Level had initially been recovered through CRD.
0502	While starting 'B' RHR pump in shutdown cooling, an isolation signal was received on F008 causing the 'B' pump to trip.
0516	NRC notified of second scram.
0518	Placed RHR pump 'A' in shutdown cooling.

Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101 • 215/770-5151

July 26, 1985

Dr. Thomas E. Murley
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 83-056/03X-1
ER 100450 FILE 841-23
PLAS- 107

Docket No. 50-387
License No. NPF-14

Dear Dr. Murley:

Attached please find a copy of Licensee Event Report No. 83-056/03X-1. This event was determined to be reportable per Technical Specification 6.9.1.9.b, in that the reactor coolant system cooldown rate limit was exceeded twice within a two hour period. Concurrent with these instances, the Residual Heat Removal shutdown cooling loop required to be in operation automatically isolated. There was another occurrence of loss of shutdown cooling one day later. The unit was in Condition 3 at the time of the occurrences.

LER's 83-030/03L-0 and 83-034/03L-0 are similar in that they deal with the loss of shutdown cooling.

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

LAK/pjg

Attachment

cc: Mr. R.H. Jacobs
Senior Resident Inspector
U.S. Nuclear Regulatory Commission
PO Box 52
Shickshinny, PA 18655

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

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