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)

Line	Field	Value
01	LICENSEE CODE (2)	PASES1
01	LICENSE NUMBER (3)	00-00000-00
01	LICENSE TYPE (4)	41111
01	CAT (5)	
CON'T 01	REPORT SOURCE (6)	L
01	DOCKET NUMBER (7)	0500038 7
01	EVENT DATE (8)	040783
01	REPORT DATE (9)	050683

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 During the perform. of a startup test to determ. the capability of the shutdown
03 cooling mode of RHR, the shutdown cooling loop in operation isolated. Concurrently,
04 excessive vessel and primary coolant cooldown rates occurred. Engineering analysis
05 has concluded that the effects of the cooldown did not impair the structural integ-
06 rity of the reactor coolant system. The use of RWCU and subsequently, the "A" loop
07 of RHR in shutdown cooling, prevented stratification in the vessel.
08

09	SYSTEM CODE (11)	CAUSE CODE (12)	CAUSE SUBCODE (13)	COMPONENT CODE (14)	COMP. SUBCODE (15)	VALVE SUBCODE (16)
	CF	D	Z	ZZZZZZ	Z	Z

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
83	—	056	/	03	L	—	0

ACTION TAKEN (18)	FUTURE ACTION (19)	EFFECT ON PLANT (20)	SHUTDOWN METHOD (21)	HOURS (22)	ATTACHMENT SUBMITTED (23)	NPRD-4 FORM SUB. (24)	PRIME COMP. SUPPLIER (25)	COMPONENT MANUFACTURER (26)
G	F	Z	Z	0000	Y	N	Z	Z999

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 These events were caused by a complex series of interactions. Procedural changes
11 have been made and engineering evaluations are underway to more closely control
12 RHR system operation in the shutdown cooling mode. This LER will be updated.
13
14

15	FACILITY STATUS (28)	% POWER (29)	OTHER STATUS (30)	METHOD OF DISCOVERY (31)	DISCOVERY DESCRIPTION (32)
	B	000	NA	C	Operator Observation

16	ACTIVITY RELEASED (33)	CONTENT OF RELEASE (34)	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
	Z	Z	NA	NA

PERSONNEL EXPOSURES

17	NUMBER (37)	TYPE (38)	DESCRIPTION (39)
	000	Z	NA

PERSONNEL INJURIES

18	NUMBER (40)	DESCRIPTION (41)
	000	NA

8305230543 830506
PDR ADOCK 05000387
S PDR

LOSS OF OR DAMAGE TO FACILITY

19	TYPE (42)	DESCRIPTION (43)
	Z	NA

PUBLICITY

20	ISSUED (44)	DESCRIPTION (45)	NRC USE ONLY
	N	NA	

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Attachment

LER 83-056/03L-0

A thorough review was performed of the events as described on the following time line. Operations and technical personnel identified main troublespots, 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. The investigation to determine the feasibility of providing throttling capability with the existing RHR heat exchanger outlet valve and operator is underway.

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 TRANSFER 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 STRATIFICATION.
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 $\sim$1 MINUTE WITH FLOW AT 4000 GPM. REACTOR SCRAMMED ON LOW LEVEL ($\sim$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 5 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.

4/8/83

0130	'B' RHR HEAT EXCHANGER DISCHARGE VALVE WOULD NOT OPEN.
0500	'B' RHR HEAT EXCHANGER DISCHARGE VALVE OPENED MANUALLY.

THE MOTOR FROM THE CORRESPONDING VALVE ON UNIT 2 WAS USED TO REPLACE THE FAILED MOTOR ON THE UNIT 1 VALVE. THE UNIT 1 VALVE DID NOT OPEN DUE TO AN OPEN MOTOR WINDING.