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R. E. DENTON
GENERAL MANAGER
CALVERT CLIFFS

August 18, 1992

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 2; Docket No. 50-318; License No. DPR 69
Licensee Event Report 92-004

Gentlemen:

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. Should you have any questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

RED/MDM/bjd
Attachment

cc: D. A. Brune, Esquire
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NRC FORM 366 (5-89) U. S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, D.C. 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Calvert Cliffs, Unit 2	0 5 0 0 0 3 1 8	1 OF 0 6

TITLE (4) Technical Specification 3.0.3 Entered, Both Saltwater Loops Inoperable Due to 21 Saltwater Air Compressor and 22 Saltwater Loop Inoperability

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 NUMBERS(S)
0 7	1 8	9 2	9 2	0 0 4	0 0	0 8	1 8	9 2		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR : (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		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	TELEPHONE NUMBER
M. D. Milbradt	AREA CODE 4 1 0 2 6 0 - 4 3 5 2

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	
B	L E	F U	B 3 3 1	N							

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)

On July 18, 1992, at 1:15 p.m., both independent Saltwater (SW) loops were declared inoperable at Calvert Cliffs Unit 2. Technical Specification (TS) 3.0.3 was entered. Immediate corrective action restored both SW loops to OPERABLE status at 2:00 p.m. Unit 2 was at 100 percent power at the time of the event.

Prior to the event, 22 Saltwater Air Compressor (SWAC) was out-of-service for mechanical maintenance. 21 SWAC was OPERABLE and in standby condition. On July 18, two Instrument Control Technicians were assigned to perform a Preventive Maintenance (PM) procedure that would test temperature switches on both SWACs. After testing the switch on 21 SWAC, a blown fuse was discovered in the control circuit and the SWAC was declared inoperable. The root cause for the event was an inadequate PM procedure that scheduled work on redundant components (SWACs) in redundant TS systems (SW loops).

This event did not result in any significant safety consequences.

Immediate corrective actions involved replacing the blown fuse, testing 21 SWAC, declaring 21 SW loop OPERABLE, and exiting TS 3.0.3. Planned corrective actions include revising PMs and issuing maintenance guidance for TS equipment.

I. DESCRIPTION OF EVENT

On July 18, 1992, at 1:15 p.m., both independent Saltwater (SW) loops were declared inoperable at Calvert Cliffs Unit 2. At the time of the event No. 22 SW loop was inoperable per the Technical Specifications (TS) and removed from service for planned maintenance. Loop No. 21 became inoperable when No. 21 Saltwater Air Compressor (SWAC) became inoperable. Since there is no ACTION requirement for two inoperable SW loops, the plant was placed in TS 3.0.3. Immediate corrective action restored No. 21 SW loop to OPERABLE status at 2:00 p.m. At the time of the event Unit 2 was at 100 percent power.

The purpose of the Saltwater System is to transfer heat from the Component Cooling Heat Exchangers, the Service Water Heat Exchangers, and the Emergency Core Cooling System (ECCS) Pump Room Air Coolers, and to transfer that heat to the Chesapeake Bay. The SWACs provide a backup source of air to the Service Water and Component Cooling Heat Exchanger SW valves, the ECCS Pump Room Air Cooler SW valves and various non-Saltwater valves. The SWACs normally do not operate, but are in standby to automatically start upon receipt of a Safety Injection Actuation Signal (SIAS). The two SWACs for Unit 2 ensure Safety-Related (SR) air is available for valve operation upon loss of the Non-Safety-Related (NSR) Instrument Air system.

On July 18, 1992, No. 22 SWAC was out of service for mechanical maintenance. No. 21 SWAC was OPERABLE and in standby condition, available for either manual or automatic operation. That morning two Instrument Control (I&C) Technicians were assigned to perform a Preventive Maintenance (PM) procedure that would test temperature switches on the SWACs. The PM, PM 2-012-I-RQ4-3, covers both SWACs, one on each SW loop.

Before the technicians were assigned the task, the PM was reviewed and scheduled by the Plant Work Control Unit. During their review, the schedulers noted both SWACs were listed on the PM card and the schedule was annotated with a note stipulating 22 SWAC should be tested when 22 SW loop is out-of-service and 21 SWAC should be tested when 21 SW loop is out-of-service. However, this note was missed by the maintenance shop when the technicians were assigned the PM.

The Lead Technician discussed the PM with the Control Room Supervisor (CRS), a licensed Senior Reactor Operator and utility employee. Specifically, they discussed which temperature switch would be tested and how the switch on No. 21 SWAC could be tested without declaring the SWAC inoperable. The particular switch senses the compressor air discharge temperature and will shut down the compressor when it is in the manual mode of operation. The technician and CRS reviewed the schematic for the SWAC control circuit and noted the testing of the temperature switch would not affect the portion of the circuit dealing with automatic SIAS initiation. Since No. 21 SWAC did not have to be declared

inoperable and the testing would not prevent the SWAC from starting on a SIAS signal the CRS gave permission to perform the test.

The technicians proceeded to test the switch on No. 22 SWAC. Due to the location of the SWACs in a hot humid environment, they decided to remove the switch from the SWAC and transport it back to the shop for testing. After testing the switch they reinstalled the switch on No. 22 SWAC. The technicians then moved on to No. 21 SWAC. At this point No. 21 SWAC was still OPERABLE, with its breaker closed but not in operation. With the breaker closed in, the technicians used low-voltage gloves to disconnect the leads on the switch and remove it to the shop. After testing was complete they reinstalled the switch.

With their testing complete, the technicians reviewed their paperwork and presented it to the CRS for approval. Operators then attempted to start No. 21 SWAC and were unsuccessful. The control switch for the SWAC indicated there was no power available and the Electrical Maintenance Unit was notified. With both SWACs inoperable both Saltwater loops were declared inoperable and TS 3.0.3 was entered at 1:15 p.m.

The electricians investigated the concern and found a blown fuse in the control circuit. Prior to performing the switch test, there were normal indications of power available to the circuit. At some point in their testing the actions of the I&C technicians inadvertently caused the fuse to blow. The electricians then replaced the fuse and operators tested the SWAC satisfactorily and declared it OPERABLE. TS 3.0.3 was exited at 2:00 p.m. In accordance with TS 3.0.3, corrective action was taken within one hour and the plant was not shut down. The exact cause for the blown fuse could not be determined.

II. CAUSE OF EVENT

The immediate cause of this event was a blown fuse in the control circuit for No. 21 SWAC. With No. 22 SWAC already inoperable, the blown fuse forced the operators to declare No. 21 SWAC inoperable and enter TS 3.0.3. This event is considered reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any event or condition prohibited by the plant's TS." and 10 CFR 50.73(a)(2)(v), "Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (a) shutdown the reactor and maintain it in a safe shutdown condition; (b) remove residual heat; (c) control the release of radioactive material; or (d) mitigate the consequences of an accident.

The root cause for this event was an inadequate PM procedure that allowed both SWACs to be tested in the same time frame. By scheduling both SWACs under one PM, a situation was generated in which the OPERABLE SWAC was made inoperable with the other SWAC already inoperable.

Contributing to this event, was the breakdown in communications between the Plant Work Control Unit and the Maintenance Shop. An opportunity to prevent this event was missed when the shop failed to note the guidance stated above, provided on the schedule.

Another contributing factor to this event was personnel error by the I&C technicians. The technicians could have avoided working on the live circuit by pursuing actions to have the power removed from the circuit. Without power, it would have been impossible to blow the fuse during their testing. But the technicians proceeded to perform their test and inadvertently spiked the circuit causing the fuse to blow. This probably occurred when they lifted the leads and removed the temperature switch. Additionally, in accordance with Calvert Cliffs Instruction (CCI)-117, which deals with temporary modifications controls, the technicians erred by failing to process a "Temporary Plant Configuration Change" prior to removing the switch and altering the control circuit configured design.

III. ANALYSIS OF EVENT

The SW system is designed to provide cooling water for the Service Water and Component Cooling Water Heat Exchangers, and ECCS Pump Room Coolers. The Component Cooling and Service Water Systems are designed to remove heat from the plants' various auxiliary systems during normal and shutdown conditions and remove heat during a LOCA.

Loss of NSR instrument air to control valves (CVs) in the SW system normal supply/discharge path causes them to fail open, maintaining the normal required cooling path. Throttling of the SW flow is necessary to assure that the SW pumps operate within the specified range of conditions during normal operation and during the recirculation mode following a LOCA. This throttling function for the throttle valves uses SR air supplied from the SWACs.

At the time of the event Unit 2 was operating at 100% power. Considering there was never a loss of NSR air or a LOCA condition in which SR air would be required, the loss of the SWACs posed no significant consequences to the health and safety of the public.

IV. CORRECTIVE ACTIONS

Immediate Actions

1. Following the unsuccessful attempt to start No. 21 SWAC, electricians determined the problem and replaced the blown fuse. The SWAC was then started successfully and declared OPERABLE. Operators exited TS 3.0.3 forty-five minutes after entering it.

2. The General Supervisor-Nuclear Plant Operations (GS-NPO) issued temporary guidance to all shift crews on management's expectations regarding maintenance on redundant equipment. The GS-NPO specifically directed the crews to avoid scheduling or approving work on redundant equipment when the opposite train is inoperable and performing evolutions that could jeopardize plant safety. To ensure proper guidance concerning approval of maintenance is captured for the long term, the expectations on approval of maintenance, set forth in Operation's policies and procedures, will be evaluated and modified as necessary.

3. To avoid scheduling testing of both SWACs at the same time, the PM will be split into two separate PMs. Each SWAC will then be tested at separate times when the opposite Saltwater loop is in an OPERABLE condition. A caution step will be added to the PM stating the test should not be performed if the other Saltwater loop is inoperable.

4. To ensure PMs are not scheduled for other redundant trains of TS related equipment, a review will be conducted to determine which additional PMs should be split so that each train is tested separately.

5. To ensure that maintenance on TS related equipment does not improperly remove redundant equipment, the Maintenance Superintendent will formalize a TS equipment maintenance policy addressing planning, scheduling, and conduct of maintenance.

6. The two I&C technicians involved in this event were counseled for their actions. Additionally, this event will be reviewed with all of the I&C technicians to emphasize the importance of avoiding work on live circuits where possible and if necessary, the proper precautions and practices that should be followed including the requirements listed in CCI-117 for Temporary Plant Configuration Changes.

V. ADDITIONAL INFORMATION

A. Identification of components referred to in this LER.

Component	IEEE 803 EIIS Funct.	IEEE 805 System ID
Saltwater System		BS
Component Cooling		CC
Service Water		BI
Emergency Core Cooling System		BQ
Instrument Air System		CD
Saltwater Air System		LE
Saltwater Air Compressor	CMP	
Heat Exchanger	HX	
Air Cooler	ACU	
Valves	V	
Temperature Switch	TS	
Breaker	BKR	
Fuse	FU	

B. Previous Similar Events.

There have been no previous similar events involving the loss of both SW loops due to testing on the SWACs.