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July 2, 1997

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317; License No. DPR 53
Licensee Event Report 97-004
Trip Bypasses Not Removed Above 15 Percent Power

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

Very truly yours,

PEK/JPW/dlm

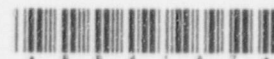
Attachment

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)

Calvert Cliffs, Unit 1

DOCKET NUMBER (2)

05000 317

PAGE (3)

1 OF 05

TITLE (4)

Trip Bypasses Not Removed Above 15 Percent Power

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 NAME	DOCKET NUMBER
06	02	97	97	004	00	07	02	97	FACILITY NAME	DOCKET NUMBER
										05000
										05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more) (11)							
POWER LEVEL (10)		17	20.2201(b)		20.2203(a)(2)(v)		X		50.73(a)(2)(i)	50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)				50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)				50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)				50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)				50.73(a)(2)(v)	Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)				50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Craig D. Sly, Senior Engineer

TELEPHONE NUMBER (include Area Code)

410-495-4858

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)		X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)

On June 2, 1997, it was discovered that the Reactor Protective Instrumentation Axial Flux Offset trip bypass and Loss of Load trip bypass were not automatically removed when thermal power, as indicated by Delta-T power, was increased above 15 percent. This condition is not allowed by Technical Specification 3.3.1.1. The plant was in Mode 1 at approximately 17 percent Rated Thermal Power.

The cause of this event was a failure to recognize that the potential difference between nuclear instrument and Delta-T indicated power could prevent compliance with the literal reading of plant Technical Specifications.

Plant procedures will be revised to require adjustment of the nuclear instruments prior to increasing power above 15 percent thermal power during reactor startup, and prior to decreasing power below 15 percent thermal power during reactor shutdown.

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

I. DESCRIPTION OF EVENT

At 0645 on June 2, 1997, a Unit 1 control room operator noted the Loss of Load trip bypass was not automatically removed when thermal power, as indicated by Delta-T power, was increased above 15 percent. Thermal power was approximately 17 percent, as indicated by Delta-T power. All four nuclear instrument channels indicated approximately 3 to 4 percent less than Delta-T power. All four associated Reactor Protective Instrumentation channels were declared inoperable and Technical Specification 3.0.3 was entered. At 0742, reactor power was reduced to less than 15 percent, as indicated by the highest reading Delta-T power channel, and Technical Specification 3.0.3 was exited. At 1130, a secondary hand calorimetric calculation was performed at a power level of approximately 14 percent. Both nuclear instrument and Delta-T indicated power were adjusted to match the calorimetric calculated power level. Normal power ascension resumed. The Loss of Load trip bypass and Axial Flux Offset trip bypass were automatically removed prior to exceeding 15 percent of Rated Thermal Power. An Issue Report was written to document the concern. At the time of discovery, the plant was in Mode 1 with the reactor coolant temperature at 533 degrees Fahrenheit and reactor coolant pressure at 2235 psig.

On May 29, 1997, at approximately 1630, excessive unidentified Reactor Coolant System leakage was observed on Unit 1. As required by Technical Specification 3.4.6.2, a plant shutdown to Mode 3 (Hot Standby) was conducted. Due to the leak, a rapid downpower of the reactor was conducted and a secondary calorimetric calibration of the nuclear instrumentation could not be performed. Therefore, reactor power, as displayed by the nuclear instruments, indicated less than would normally be expected during the reactor startup on June 2.

While failure to perform the calorimetric calibration during the plant shutdown was not the primary cause of this event, it was a contributing factor. The lower than expected nuclear instrument indications were a direct result of changes in Reactor Coolant System temperature, rod shadowing, and core power distribution as compared to those existing at the time of the previous calorimetric calibration.

II. CAUSE OF EVENT

The cause of this event was a failure to recognize that the potential difference between nuclear instrument indicated power and Delta-T indicated power could prevent compliance with the literal reading of plant Technical Specifications. Both nuclear instrument and Delta-T power displays are indicative of "Rated Thermal Power." However, at low power levels, Control

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Room operators have been instructed to use Delta-T power as the indication of Rated Thermal Power. The Axial Flux Offset and Loss of Load trip bypass receive input from the nuclear instrumentation channels, as opposed to the Delta-T power channels, or "Qpower," which is the greater of either nuclear instrument or Delta-T power. At low power levels, Delta-T power is more accurate than nuclear instrument indicated power and is the indication used to determine reactor power by operators until the two indications are calibrated, usually at 30 percent power during power ascension. Therefore, if reactor power, as indicated by the nuclear instruments, does not closely agree with Delta-T power, the Axial Flux Offset and Loss of Load trip bypass will not be removed when reactor power is greater than or equal to 15 percent of Rated Thermal Power, as indicated by Delta-T power. Additionally, during reactor shutdown, the trip bypasses may be prematurely inserted above 15 percent Rated Thermal Power, as indicated by Delta-T power.

A contributing factor in this event was not performing a calorimetric calibration of the nuclear instruments during the previous rapid plant shutdown. Technical Specification Table 4.3-1, Item 2.a, requires the nuclear instrument channels to be calibrated when reactor power is greater than 15 percent Rated Thermal power. Although Technical Specifications do not specifically require calibration during a plant shutdown, it is common practice at Calvert Cliffs to conduct a secondary calorimetric calibration at approximately 30 percent power during a controlled plant shutdown. This would have reduced the deviation between nuclear instrument and Delta-T indicated power.

III. ANALYSIS OF EVENT

The importance of the Loss of Load trip and Axial Flux Offset trip in accident mitigation was evaluated to determine the safety significance of this event. With respect to the Loss of Load trip, the accident analysis does not credit this trip. The trip minimizes the severity of the ensuing transient following a loss of load, and helps avoid lifting of the main steam safety valves. For the loss of load event, initiating a reactor trip based on a turbine trip results in lower primary and secondary temperature and pressure, as compared to initiating a reactor trip based on other parameters, such as high pressurizer pressure. Our analysis indicates that if this trip were to remain disabled up to approximately 40 percent power, the primary safety valves, power operated relief valves, and main steam safety valves would remain closed during a loss of load event.

The Axial Flux Offset trip helps ensure that fuel damage will not result from excessive axial flux peaking. Analysis has shown that margin is available to disable this trip as high as 35 percent power.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (1.)

For this event, indicated nuclear power deviated from Delta-T power by approximately 3 to 4 percent. Because the Loss of Load trip is not credited in the safety analysis and the Axial Flux Offset trip can be disabled as high as 35 percent power, the safety analysis can accommodate the worst case uncertainty associated with using indicated nuclear instrument power to enable these trip functions. Therefore, this event had no safety significance and did not result in any increased risk to the health and safety of the public or plant personnel.

This event is considered reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications."

IV. CORRECTIVE ACTIONS

Upon discovery of the event, the control room declared all four associated Reactor Protective System instrumentation channels inoperable and reactor power was decreased to less than 15 percent Rated Thermal Power. A secondary calorimetric hand calculation was performed at 14 percent power and plant procedures were revised to permit matching both nuclear instrument and Delta-T indicated power to the secondary calorimetric calculated power. Plant procedures were also revised to require verifying that the Loss of Load Trip and Axial Flux Offset Trip bypasses are automatically removed prior to exceeding 15 percent reactor power.

Plant procedures will also be revised to require the nuclear instruments to be adjusted to Delta-T power at approximately 10 percent power during reactor startup and also at approximately 20 percent power during reactor shutdown. Only those nuclear instruments which indicate less than Delta-T power will be adjusted. Therefore, the adjusted channels indication will be greater than the indication prior to adjustment, which is conservative.

V. ADDITIONAL INFORMATION

A. Affected Component Identification:

Component or System	IEEE 803 EIIIS Funct	IEEE 805 System ID
Incore/Excore Detector System	CHA	IG
Reactor Protective System	CHA	JC
Power Indicator	JI	JC

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B. Previous Similar Events:

Within the past five years, there have been no previous reportable events involving a failure of the Axial Flux Offset and Loss of Load trips to automatically enable when reactor power was increased above 15 percent.