

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
 Calvert Cliffs, Unit 2

DOCKET NUMBER (2)
 050003181 OF 03

PAGE (3)
 1 OF 03

TITLE (4) Following the Calibration of the Turbine Generator Controller, Excess Load Results in a Low Steam Generator Pressure Reactor Trip

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 NUMBER(S)
07	03	87	78	7	005	01	05	16	88		05000
											05000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) 1	20.402(b)	20.406(c)	X	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0.07	20.406(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(vii)(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)(viii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
D.L. Shaw, Licensing Engineer	301 269-4028

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

Prior to startup, Calvert Cliffs Unit 2 main turbine generator controller was calibrated using a new Westinghouse simulator. Results required setting the Initial Valve Position Percent micrometer at .162. This setting should cause the turbine generator to initially pick up 5 percent of rated load.

On July 3, 1987, with reactor power at 7 percent, the main breaker was shut. The generator picked up approximately 100 megawatts, or 12 percent of rated load, and caused a sudden increase in steam demand resulting in quickly lowering steam generator pressure.

The Operators took action to reduce steam demand. Turbine Bypass Valves were shut and turbine load was manually lowered, but the reactor tripped on Low Steam Generator Pressure.

Following discussion, the Initial Valve Position Percent micrometer was changed to the previous outage result, .050. The turbine generator picked up approximately 2 megawatts and more load had to be picked up manually. The turbine generator was later taken off line for turbine balancing. Considering the results of the previous two startups, the micrometer was then adjusted to .100 and the turbine generator picked up approximately 5.5 percent of rated load.

In retrospect the .162 setting was too high. Comparisons of results with the plant set-point log settings that may require further supervisory review of questionable results will be made. The calibration procedure is being simplified and improved. The simulator and controller were recalibrated. The subsequent startup was normal.

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					0 2	OF 0 3	

TEXT (If more space is required, use additional NRC Form 366A (2) (17))

In preparation for startup following the 10-Year In Service Inspection refueling outage, Calvert Cliffs Unit 2 main turbine generator controller (EIIS TA/TB) was calibrated using Procedure I-20, Turbine Generator Electro-Hydraulic Controller Calibration/Calibration Check. I-20 involved the use of a new, calibrated Westinghouse simulator that sends signals to the controller that normally come from the running turbine generator. Results of I-20 required setting the Initial Valve Position Percent micrometer at .162. This setting is supposed to cause the turbine generator to pick up 5 percent (approximately 40 megawatts) of rated load when the main breaker is closed.

On July 3, 1987, with reactor power at 7 percent, with Operators controlling primary system cold leg temperature at 536 degrees Fahrenheit using Turbine Bypass Valves (EIIS SB-V), and with turbine mode in "Operator Auto" (controller operating automatically), the main breaker was shut. The generator (EIIS TB-GEN) picked up approximately 100 megawatts, or 12 percent of rated load, instead of 5 percent and caused a sudden increase in steam demand resulting in quickly lowering steam generator (EIIS SB-SG) pressure and primary (EIIS AB) cold leg temperatures.

The Operators took action to reduce steam demand. Turbine Bypass Valves were shut and turbine load was lowered manually. Steam Generator pressure continued to decrease. Adding adversely to the transient was a positive moderator temperature coefficient, giving negative reactivity feedback, causing core power to decrease, causing further reduction in core temperatures, and therefore causing additional reduction in steam generator temperature and pressure.

The prompt Operator actions were not enough to overcome the excessive cool down and pressure reduction. The reactor (EIIS AB-RCT) tripped on Low Steam Generator Pressure at 1331, July 3, 1987. All reactor safety systems functioned as expected and no Technical Specification limits were exceeded. Emergency Operating Procedures were carried out. The reactor was stable at 1334, July 3, 1987.

Post trip analysis and discussion occurred involving plant management, engineering, technicians, and the turbine vendor representative. The Initial Valve Position Percent micrometer setting from the previous performance of I-20 was .050. It was decided that even though using that setting would probably result in an initial load pick up of less than 5%, using that setting was a prudent and conservative plan. At that setting, the turbine generator picked up approximately 2 megawatts, essentially no load, and more load had to be picked up manually. On July 8, 1987 the turbine generator was taken off line for turbine balancing. Again, discussion was held to determine where to set the Initial Valve Position Percent micrometer. Considering the two settings used on July 3 and the resulting load picked up, the micrometer was then adjusted to .100. The turbine generator picked up approximately 50 megawatts, which is approximately 5.5 percent of rated load.

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

The root cause of this event has not been isolated to any single factor. Procedure I-20 is long and complex. In retrospect, the result of .162 for the Initial Valve Position Percent micrometer was too high. Future I-20 setpoint results will be placed as remarks in the plant setpoint log for comparison to the logged setpoint and possible further supervisory review prior to changing the micrometer setting. Also, I-20 is being simplified and improved with the assistance of the Westinghouse technical representative as time permits.

The simulator and turbine generator controller have been recalibrated and new plots of valve position indication voltages versus actual physical valve position have been implemented which improve valve throttling characteristics. Start-up following this recalibration, using the I-20 result for the Initial Valve Position Percent micrometer setting, was normal.

The safety consequences are not considered significant. Although the incident would have been more severe under reasonable and credible alternative conditions, namely a higher excess load, the most limiting excess load would be an inadvertent opening of the atmospheric dump and bypass valves, at any power level, which has been analyzed in the Final Safety Analysis Report, Section 14.4

No similar events have occurred.

The contact for this event is Don Shaw, (301) 260-4028.



NUCLEAR OPERATIONS DEPARTMENT
CALVERT CLIFFS NUCLEAR POWER PLANT
LUSBY, MARYLAND 20657

May 16, 1988

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20535

Docket No. 50-318
License No. DPR 69

Dear Sirs:

The attached LER 87-005, Rev. 1 is being sent to you as required by 10 CFR 50.73.

Should you have any questions regarding this report, we would be pleased to discuss them with you.

Very truly yours,

A handwritten signature in cursive script that reads "J.R. Lemons".

J.R. Lemons
Manager - Nuclear Operations Department

D24
JRL:DLS:plv

cc: William T. Russell
Director, Office of Management Information and Program Control
Messrs: J.A. Tiernan
W.J. Lippold

JE22
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