

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Oconee Nuclear Station, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 2 7 0					PAGE (3) 1 OF 03	
TITLE (4) Reactor Trip on High RCS Pressure Following Closure of Turbine IVs and CVs																
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	11	85	85	006	00	08	12	85					0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)														
POWER LEVEL (10) 01914		20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)		
		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)(vii)				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)(viii)(A)						
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)						
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME Sandy G. Godwin, Licensing										TELEPHONE NUMBER 710 14 317 131-12131612						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPROS						
D	J1J1	IM101D	C101810	N												
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input type="checkbox"/> NO				

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

On July 11, 1985 at 1909:58 hours, Oconee Unit 2 tripped from 94% full power on high Reactor Coolant System (RCS) pressure. While personnel were troubleshooting in the Electro-Hydraulic Control (EHC) system cabinets, a spurious signal was generated which caused an inadvertent closure of the Low Pressure Turbine Intercept Valves (IVs) and Main Turbine Control Valves (CVs). This caused an increase in RCS pressure, which resulted in a high RCS pressure reactor trip approximately seven seconds later.

The immediate corrective action was to stabilize the unit at hot shutdown conditions. The unit was brought back on line after an investigation of the cause of the spurious signal, and after further troubleshooting of the EHC.

The health and safety of the public was not affected by this incident.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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

Description of Occurrence:

On July 11, 1985 a request was submitted to investigate and repair as necessary, abnormal main steam header pressure oscillations. At approximately 1500 hours that day, appropriate personnel began investigating the problem. The troubleshooting was begun by observing the Transient Monitor in the Control Room. The initial investigation indicated the EHC system was initiating CV movements which caused the observed main steam header pressure oscillations. Further, while main steam header pressure was observed, the turbine controls were placed in the manual mode, followed by the manual mode with Load Limits. It was determined that the flow control portion of the EHC was not at fault, so the turbine controls were returned to Auto.

At approximately 1800 hours, appropriate personnel began troubleshooting within the EHC cabinets. Test probes from a Six Channel Analog Recorder (Gulton TR666) were inserted into various test points. At 1909 hours when the 5th of the six probes was inserted into the EHC, a spurious output signal was generated. The EHC interpreted the noise as a high rate of change in turbine speed and closed the CVs and IVs in response. An immediate increase in the RCS pressure resulted which caused the reactor to trip on high RCS pressure approximately seven seconds later.

The unit was stabilized, but not before RCS volume was increased by a start of a High Pressure Injection Pump (HPIP) for approximately three minutes and the main steam pressure was decreased to approximately 990 psig to restart Main Steam Release Valves (MSRV). Also, the Borated Water Storage Tank was used as a source of makeup water for about one minute because the RCS Makeup Tank inventory was low at the time of the trip.

Cause of Occurrence:

The lack of documented guidance on the use of EHC test points is the root cause of the incident. A contributing factor to this incident is the inherent sensitivity of the EHC to electrical noise. There is no evidence that the involved personnel failed to follow proper practices in their effort to troubleshoot the main steam header oscillation problem. The six channel recorder, test probes, and cables were in good operating condition. All test points used were supplied by the vendor and were identified on controlled manufacturer documents. The manufacturer's book did not contain any warnings of the EHC test point sensitivity.

A review of past incident reports revealed six incidents involving reactor/turbine trips due to spurious closures of the IVs and CVs. However, none of the trips occurred as a result of EHC test point sensitivity.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

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

Corrective Action:

The immediate corrective action was to stabilize the unit at hot shutdown conditions. Supplementary corrective action consisted of investigating what caused the CVs and IVs to close. EHC card test points will be investigated. Test points which have a potential of generating signals that will cause a turbine trip and/or cause the turbine CVs and IVs to close will be identified and will be included in a procedure for trouble-shooting the EHC.

Analysis of Occurrence:

The post-trip plant response was as expected. No abnormal performances were identified.

The reactor coolant temperature had a maximum of 600°F before the trip. Following the trip reactor coolant temperature began to decrease, however, the cooldown limit of 50°F/hr was not exceeded. The final and lowest RCS temperature was approximately 550°F, close to the expected target value of 555°F. No overcooling occurred.

Maximum pressurizer level was approximately 220 inches prior to the trip. After the trip it dropped to a minimum of approximately 50 inches and was later increased to approximately 120 inches. To ensure an optional reactor coolant inventory control, the 2HP-26 valve was opened manually shortly after the trip. The second HPI pump 2A started automatically on low reactor coolant pump seal injection flow. Approximately four minutes later the 2HP-26 valve was closed and the 2A HPI pump was secured.

Reactor coolant system pressure peaked at 2319 psig, which is an expected value for an overheating transient from this power level. Post-trip reactor coolant pressure steadied out at about 2100 psig, and was controlled by the pressurizer heaters and spray. The pressurizer relief valves were not challenged.

Maximum steam line pressure was approximately 1098 psig. The pressure was later reduced to about 990 psig to reseal two main steam relief valves 2MSRV-2 and 2MSRV-10. This is close to expected reseal pressure for these two valves of 1010 psig. Minimum steam line pressure was approximately 900 psig prior to the trip.

Steam generator levels decreased from an initial value of approximately 225 inches to 25 inches, which was the minimum steam generator level during this trip. Feedwater was supplied by the main feedwater system.

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VICE PRESIDENT
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August 12, 1985

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

Subject: Oconee Nuclear Station, Unit 2
Docket Nos. 50-269, -270, -287
LER 270/85-06

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 270/85-06 concerning a Unit 2 reactor trip on high Reactor Coolant System (RCS) pressure on July 11, 1985. This report is submitted in accordance with §50.73(a)(2)(iv). This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H.B. Tucker

Hal B. Tucker

SGG:slb

Attachment

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