



November 4, 1996
LIC-96-0154

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Reference: 1. Docket No. 50-285

Gentlemen:

Subject: Licensee Event Report 96-007 Revision 0 for the Fort Calhoun
Station

Please find attached Licensee Event Report 96-007 Revision 0 dated
November 4, 1996. This report is being submitted pursuant to 10 CFR
50.73(a)(2)(iv). If you should have any questions, please contact me.

Sincerely,

T. L. Patterson
Division Manager
Nuclear Operations

TLP/epm

Attachment

c: Winston and Strawn
L. J. Callan, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
INPO Records Center

IE221/

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY
INFORMATION COLLECTION REQUEST: 500 HRS. REPORTED LESSONS LEARNED
ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO THE
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

FACILITY NAME (1)

Fort Calhoun Station Unit No. 1

DOCKET NUMBER (2)

05000285

PAGE (3)

1 OF 4

TITLE (4)

Unplanned Reactor Protection System Actuation During a Plant Cooldown

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
10	05	96	96	-- 007 --	00	11	04	96	FACILITY NAME	DOCKET NUMBER
										05000
OPERATING MODE (9)		3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more) (11)							
POWER LEVEL (10)		0	20.2201(b)		20.2203(a)(2)(v)		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)		75.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		X 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)		or in NRC Form 366A	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Matthew H. Pohl, Shift Technical Advisor

TELEPHONE NUMBER (Include Area Code)

(402) 533-6820

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS

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-spaced typewritten lines) (16)

On October 5, 1996, while Fort Calhoun Station was in Mode 3 (Hot Shutdown) preparing for a planned refueling outage, Operations personnel were preparing to cooldown and depressurize the Reactor Coolant System. Procedure OP-3A, "Plant Shutdown," Attachment 3, "RCS Cooldown from Mode 3 to Mode 4/5," directed them to place the Reactor Protection System (RPS) low Steam Generator (SG) pressure trip units in bypass when the RPS pre-trips for SG low pressure actuate (about 550 pounds per square inch absolute (psia)). At 1337 hours, SG pressure dropped below the low SG pressure setpoint (about 500 psia) and the RPS initiated a reactor trip signal due to low SG pressure.

The cause of this event was Failure to complete a step in OP-3A as required. In addition, over reliance on a single individual to assure this task was completed contributed to the actuation.

Corrective actions include revision of the procedure to ensure the critical bypass steps are completed as required, and delegation of responsibilities for these steps to an additional individual to provide a second check on the timely performance of this step.

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Fort Calhoun Station Unit No. 1	05000285	96	- 007 -	00	2 OF 4

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

BACKGROUND

The Reactor Protection System (RPS) can be actuated by a variety of plant signals. Some of the initiation signals are at setpoints that coincide with Engineered Safety Feature (ESF) actuation setpoints. The RPS and ESF systems have been designed to allow manually disabling some of these actuation signals during a plant shutdown and cooldown.

When Reactor Coolant System (RCS) pressure is between 1700 pounds per square inch absolute (psia) and 1600 psia, the Pressurizer Pressure Low Signal (PPLS) must be blocked. When Steam Generator (SG) pressure drops below 550 psia, but, before reaching 500 psia, plant procedures require the RPS system low SG pressure trip be bypassed. In addition, within the same pressure range the Steam Generator Low pressure Signal (SGLS) is also blocked. Failure to bypass any of these three actuation signals will result in the actuation of their respective systems.

EVENT DESCRIPTION

On October 5, 1996, at 0700, Fort Calhoun Station (FCS) was in a Hot Shutdown Condition (Mode 3), with all control rods fully inserted into the core and all four Reactor Coolant Pumps (RCPs) operating. A plant cooldown was planned for later that morning. The Shift Supervisor (SS) briefed the Licensed Senior Operator (LSO) and the two Licensed Operators (LOs) who would be doing the cooldown. At 1145, the operating crew initiated the planned cooldown of the RCS using Operating Procedure (OP) OP-3A, "Plant Shutdown," Attachment 3, "RCS Cooldown from Mode 3 to Mode 4/5." The objective was to cool down from about 528 degrees Fahrenheit (F) to 395 degrees F at about 50 degrees F per hour, and concurrently depressurizing the RCS to 1000 psia.

At about 1315, with RCS pressure below 1700 psia, PPLS was blocked in accordance with OP-3A, Attachment 3, Step 7. At 1323 the SGLS and RPS pre-trip annunciators actuated indicating that SG pressure was low enough to allow these signals to be blocked. One of the control room operators acknowledged the alarms. Both the RPS and the SGLS SG low pressure pre-trip alarms were acknowledged simultaneously using a common annunciator acknowledgment push-button. At about 1332, with SG pressure below 550 psia, the ESF actuation signal SGLS was blocked in accordance with OP-3A, Attachment 3, Step 9.

Completion of Step 9 was a higher priority than Step 8 (bypassing the RPS SG low pressure signal) because the effects of an SGLS actuation (i.e., steam generator isolation) would have been more significant than the effects of a RPS actuation (i.e., no actual control rod motion and no diesel start).

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

At 1336, one of the RPS low SG pressure trip units actuated. The operators realized that the step to bypass the RPS low SG trip had not been performed (OP-3A Attachment 3, Step 8) and immediately went to get the keys to allow bypassing the RPS low SG trips. About 45 seconds later, at 1337, as the LSO was acquiring the RPS bypass keys, another RPS low SG pressure trip unit trip actuated, resulting in a RPS trip signal. Step 8 of OP-3A, Attachment 3, which addresses bypassing this RPS function, was not completed in time to prevent the RPS actuation.

The RPS actuated as designed and plant systems operated as expected. The plant was in Mode 3, and all Control Element Assemblies (CEAs) had previously been fully inserted when the RPS trip signal was received. Installation of the SG low pressure bypass keys was completed and the reactor trip was reset. At 1548 Central Daylight Time (CDT), October 5, 1996, the NRC Operations Center was notified of the RPS actuation, in accordance with 10 CFR 50.72(b)(2)(ii). This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).

SAFETY SIGNIFICANCE

It was determined that the inadvertent actuation of the RPS had no nuclear safety significance in this situation. Control Element Assemblies (CEAs) had previously been fully inserted into the reactor core in accordance with OP-3A, therefore, no CEA motion occurred as a result of the RPS actuation.

The failure to perform a step in a procedure is potentially significant. While the failure to bypass the RPS function had minimal consequences in this situation, a similar failure to block PPLS or SGLS could have resulted in an ESF actuation and an unnecessary plant transient.

CONCLUSION

The LSO had the primary responsibility for ensuring completion of each step of the procedure. The LSO had the only copy of the procedure, and initialed steps as they were completed. Bypassing the RPS low SG pressure trip is covered by Step 8 of OP-3A. Bypassing SGLS is covered by Step 9 of OP-3A. Step 9 is on the top of the page following Step 8. The performance of Step 9 before completing Step 8 was allowed by OP-3A; however, the LSO did not return to the previous page to complete Step 8 in time to prevent the RPS actuation. Therefore, the root cause of this event was failure of the LSO to return to OP-3A, Attachment 3, Step 8 after completion of Step 9.

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

One contributing cause to this event was over reliance on the LSO to remember to return to a skipped step. This may place an unnecessary burden on the LSO, particularly because of the limited "window" of opportunity to perform Steps 8 and 9.

CORRECTIVE ACTIONS:

1. Procedure OP-3A will be revised as necessary to minimize the potential for an event of this nature occurring in the future. The procedure revisions will be completed by March 30, 1997.

In addition the following enhancements will be made to OP-3A.

2. A "place keeper" similar to that used in the plant Emergency Operating Procedures (EOPs) will be used to assist the operators in ensuring that critical steps are completed in procedure OP-3A. The necessary procedure changes will be completed by March 30, 1997.
3. The control of bypass keys, as it applies to procedure OP-3A, will be evaluated to determine if any changes are needed. This evaluation and any accompanying procedure changes will be accomplished by March 30, 1997.

PREVIOUS SIMILAR EVENTS:

LER 92-005 reported a similar actuation of the RPS system due to failure to place a RPS bypass switch in the correct position during a plant shutdown.