

Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247
402/636-2000

April 24, 1992
LIC-92-132L

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

Reference: Docket No. 50-285

Gentlemen:

Subject: Licensee Event Report 92-012 for the Fort Calhoun Station

Please find attached Licensee Event Report 92-012 dated April 24, 1992. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B). If you should have any questions, please contact me.

Sincerely,

W. G. Gates

W. G. Gates
Division Manager
Nuclear Operations

WGG/lah

Attachment

c: J. B. Martin, NRC Regional Administrator, Region IV
D. L. Jigginton, NRC Senior Project Manager
S. D. Bloom, NRC Project Engineer
R. P. Mullikin, NRC Senior Resident Inspector
INPO Records Center

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Year 1

LICENSEE EVENT REPORT (LER)

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, DC 20555, 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) 0 | 5 | 0 | 0 | 0 | 2 | 8 | 5

PAGE (3) 1 OF 0 | 3

TITLE (4) Nonconservative Steam Generator Differential Pressure Trip Setpoints

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 (8)			
0	3	2	9	2	0	1	2	0	0	N	0 5 0 0 0		
0	3	2	9	2	0	1	2	0	0		0 5 0 0 0		

OPERATING MODE (9) 5

POWER LEVEL (10) 0 | 0 | 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 306A)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(v)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: Craig E. Booth, Shift Technical Advisor

TELEPHONE NUMBER: 4 | 0 | 2 | 5 | 3 | 3 | - | 6 | 8 | 7 | 4

COMPLETE ONE LINE FOR EACH GOVERNMENT 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) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On March 25, 1992 at 0630, while in Mode 5 (refueling shutdown), it was determined that the Steam Generator Differential Pressure/Asymmetric Steam Generator Transient Protection Trip Function (ASGTPTF) setpoints on all four channels of the Reactor Protective System (RPS) were greater than that allowed by Technical Specifications (TS). This was the result of nonconservative setpoint values being allowed by approved plant procedures.

The event was determined to be reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). The event was not found to be safety significant, based on margin between the as-found setpoints and the analyzed limit less loop uncertainty.

The root cause of this event has been determined to an inadequate program or methodology for implementing and controlling RPS setpoints.

Corrective actions have been taken to correct the procedures affecting ASGTPTF, and a review of RPS and Engineered Safety Feature (ESF) surveillance tests and calibration procedures has been performed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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, DC 20541, 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) 0 5 0 0 0 2 8 5 9 2 - 0 1 2 - 0 0 0 2 OF 0 3	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

The Fort Calhoun Station (FCS) Reactor Protective System (RPS) consists of four channels, "A" through "D". Each channel has twelve trip units designed to initiate an automatic reactor trip when a two-out-of-four coincidence logic is met.

Trip Unit No.7 (TU-7) of the RPS is the Steam Generator Differential Pressure/Asymmetric Steam Generator Transient Protection Trip Function (ASGTPTF). The ASGTPTF was installed at Fort Calhoun Station in April of 1984. The basis for installing the ASGTPTF was an analysis which revealed the need for supplemental protection of safety limits in the event of a loss of load to one Steam Generator (SG) resulting from an inadvertent Main Steam Isolation Valve (MSIV) closure. Additional less limiting asymmetric SG transients considered were: 1) excess load on one SG, 2) loss of feedwater to one SG, and 3) excess feedwater to one SG. Analysis has shown that the most limiting event type is a loss of load.

The ASGTPTF trip unit utilizes pressure inputs from each SG. Differential pressure signals are calculated by subtracting the SG "A" pressure signal from the SG "B" pressure signal and also subtracting the SG "B" pressure signal from the SG "A" pressure signal. These two signals are then fed to an auctioneering circuit that passes the higher signal to the trip unit. The trip unit has a bistable comparator with pre-trip and trip setpoints which were set to values corresponding with 100 psid and 135 psid respectively. Technical Specification (TS) 1.3, Table 1-1 indicates that the trip setpoint for the Steam Generator Differential Pressure Trip is required to be less than or equal to 135 psid.

On March 25, 1992 at 0630, while in Mode 5 (refueling shutdown), it was determined that the ASGTPTF trip setpoint on all four channels of the RPS was greater than that allowed by TS's. The deviation was discovered during a revision of Surveillance Test (ST) IC-ST-RPS-0018. The ST acceptance criteria for the ASGTPTF setpoint were specified as a desired voltage (1.080 VDC) with an allowable range (1.050 to 1.108 VDC). The desired voltage value of 1.080 VDC corresponds to a differential pressure value of 135 psid (the TS upper limit), and the voltage range of 1.050 VDC to 1.108 VDC corresponds to a differential pressure range of 131.5 psid to 138.5 psid (i.e., ± 3.5 psid). The four channels had passed the acceptance criteria of the ST, with a maximum as found voltage of 1.089 VDC (which corresponds to a differential pressure value of 136.125 psid); however, due to the range of the ST acceptance criteria it was possible for Trip Unit No. 7 of the RPS to pass its ST, but not comply with the TS required limit of less than or equal to 135 psid.

A review of FCS records was performed to identify the date the acceptance criteria of 1.050 VDC to 1.108 VDC was placed in the ST. This review found that the problem with the acceptance criteria had existed from the time of installation of the ASGTPTF.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50 C.F.R. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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) 0 5 0 0 0 2 8 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 2	— 0 1 2	— 0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 886A's)(17)

The event was found not to be safety significant, based on margin between the as-found setpoints and the analyzed limit less loop uncertainty. The bounding analysis for ASGTPTF, Operations Support Analysis Report (OSAR) 83-37, was performed for Cycle 9. OSAR 83-37 identified 175 psid as the analytical limit for the ASGTPTF. The OSAR identifies two separate uncertainty values, 22 psi and 40 psi, of which the 22 psi value represents the actual loop uncertainty for the instrumentation and the 40 psi uncertainty value represents the loop uncertainty and 18 psi design margin. Using the 22 psi value, an allowable maximum equipment setpoint of 153 psid is obtained (i.e., 175 psid minus 22 psi). Application of the 40 psi uncertainty results in the conservative TS setpoint of 135 psid (i.e., 175 psid minus 40 psi).

While the ST did allow operation with ASGTPTF setpoints above the TS limit of 135 psid, adequate margin is considered to have existed between the maximum value of 138.5 psid allowed by the ST, and the maximum allowable equipment setpoint of 153 psid. For this reason it was concluded that the ASGTPTF would have been able to perform its design function. Recently performed loop uncertainty calculations have been used to verify that adequate margin existed with the subject as-found setpoints.

The root cause of this event has been determined to be an inadequate program or methodology for implementing and controlling RPS setpoints. A contributing cause was inadequate communication between the group performing the setpoint analysis and the individual responsible for incorporating the setpoint into the calibration procedures and surveillance tests.

The following corrective actions have been or will be taken as a result of this event:

1. Procedures that check/calibrate ASGTPTF setpoints have been revised to provide setpoints/allowable ranges which are conservative with respect to TS requirements.
2. A review of RPS and Engineered Safety Feature (ESF) surveillance tests and calibration procedures has been performed to ensure that allowed setpoint ranges are within TS requirements.
3. A methodology for establishing instrument uncertainties and setpoints, given an analytical limit, will be adopted and incorporated into Production Engineering Division procedures by June 30, 1992.
4. A program will be established by September 1, 1992 to maintain analytical assumptions in plant procedures as appropriate.

LER's 88-016 and 89-021 dealt with potentially nonconservative RPS setpoints, however, in these previous LER's, analytical errors were the primary issue.