

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
McGuire Nuclear Station, Unit 1DOCKET NUMBER (2)
0 5 0 0 0 3 6 9PAGE (3)
1 OF 0 2TITLE (4)
Overtemperature Delta T Reactor Trip

EVENT DATE (6)			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)						
0	1	3	0	8	4	8	4	0	0	2	0	5	0	0	0		
0	1	3	0	8	4	0	0	2	2	9	8	4	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)	0 9 4	20.402(b)	20.406(c)	X	50.73(a)(2)(iv)	73.71(b)					
		20.406(a)(1)(i)	50.38(c)(1)		50.73(a)(2)(v)	73.71(c)					
		20.406(a)(1)(ii)	50.38(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)					
		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
Phillip B. Nardoci, Licensing EngineerTELEPHONE NUMBER
AREA CODE
7 0 4 3 7 3 - 7 4 3 2

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
X	J C I	M O D	W 1 2 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)
YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NOEXPECTED SUBMISSION DATE (15)
MONTH DAY YEAR

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

On January 30, 1984 a Unit 1 reactor trip was initiated by the reactor protection system on two-out-of-four overtemperature delta T (OTAT) signal. The trip occurred from a voltage spike in Loop C while Loop A was in the TEST (TRIP) condition for Maintenance. Unit 1 was in Mode 1 at 94% power at the time of the trip.

This event is attributed to the failure of a Lead/Lag card in Loop C AT/Tavg of the process control system. The reactor tripped as designed and no anomalies arising from the transient occurred. The faulty card was replaced and the loop returned to service.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1) McGuire Nuclear Station, Unit 1	DOCKET NUMBER (2) 0500036984	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Signals from resistance temperature detectors (RTDs)[EIIS:XE] located in reactor coolant system [EIIS:AB] loops A, B, C and D are used to compute the reactor coolant ΔT (temperature of the hot leg, T_H , minus the temperature of the cold leg, T_C) and an average coolant temperature (T_{avg}). Excessive deviation of any single loop ΔT from the auctioneered ΔT (highest ΔT of all four loops) will initiate an annunciator alarm, Loop Delta/T Deviation. If two-out-of-four ΔT signals exceed the OTAT reactor trip setpoints, the reactor will trip.

At 1603 on January 30, 1984 a Unit 1 reactor trip was initiated by the reactor protection system [EIIS:JC] on a two-out-of-four overtemperature delta T (OTAT) signal. The trip occurred from a voltage spike in Loop C while Loop A was in the TEST (TRIP) condition for maintenance. Unit 1 was in Mode 1 at 94% power at the time of the trip.

On January 24, 1984, monthly functional testing performed on Loop C delta T/ T_{avg} ($\Delta T/T_{avg}$) of the process control system discovered that output from the Lead/Lag (NLL) card [EIIS:IMOD] was oscillating. The Card was repaired by replacing one operational amplifier (Motorola, MC-1733CG). Loop C $\Delta T/T_{avg}$ calibrations were successfully performed and the Loop was returned to service.

On January 30, voltage spikes were recorded on Loop A OTAT. Loop A $\Delta T/T_{avg}$ was placed in the TRIP condition. The spikes were found to be originating from the Function Generator (NCH) card [EIIS:IMOD]. The faulty card was replaced with spare card. However, while Loop A $\Delta T/T_{avg}$ was still in the TRIP condition for repair/calibration, the NLL card produced voltage spikes which exceeded the trip setpoint on Loop C OTAT, causing the reactor trip. This card was replaced with a spare and the Loop returned to service on January 31.

There have been numerous NLL card failures in the process control system in Units 1 and 2. Similar process control system card failures are documented in LER's No-369/81-125, 81-172, 82-18, 83-57, 83-90, 83-103, 83-104, 83-108, and 370/83-60. There appears to be no one specific component failing on these cards but the numerous card failures have been reported to Westinghouse.

The reactor tripped as designed, followed immediately by the turbine trip. Reactivity was properly controlled by the reactor trip. Reactor coolant system pressure decreased to approximately 1980 psig and then recovered to its normal post-trip value. The pressurizer power operated relief valve and safety valves were not challenged. The reactor coolant average temperature reached a minimum value of 556°F before settling out at its no-load value (557°F). Pressurizer level was properly controlled at its expected post-trip value of 25%.

Steam pressure peaked at about 1150 psig. The Main Steam Safety Valves were not challenged. Steam generator level was well controlled. Level had recovered to near no-load conditions within twenty minutes after the trip. Main feedwater was isolated as expected on reactor trip with coincident low average coolant temperature shortly after the trip. Auxiliary feed water initiated on low-low steam generator level and was used to recover and maintain steam generator level. This response was as expected. All safety systems responded appropriately to the trip. No anomalies were noted.

The health and safety of the public were unaffected by this event.

DUKE POWER COMPANY

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CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

February 29, 1984

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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: McGuire Nuclear Station, Unit 1
Docket No. 50-369
LER 369/84-02

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/84-02 concerning an overtemperature Delta T Reactor Trip which is submitted in accordance with §50.73(a)(2)(iv). Initial notification of this event was made (pursuant to §50.72 Section (b)(2)(ii)) with the NRC Operations Center via the ENS on January 30, 1984. 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

PBN:glb

Attachment

cc: Mr. James P. O'Reilly
Regional Administrator
U. S. Nuclear Regulatory Commission
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