NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	1 OF 0 3

TITLE (4)
Reactor Trip on Power Range High Setpoint High Flux Signal

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)
0 4	1 6	8 6	8 6	0 1 0	0 0	0 5	1 5	8 6		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
2	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
R. D. Affolter - Superintendent, Systems Engineering	AREA CODE 3 1 4 6 7 6 - 8 2 4 0

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	
B	E I	X F M R	G 0 8 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 7	1 2	8 6

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

On 4/16/86 at 1424 CST, a reactor trip and a Feedwater Isolation (FWIS) occurred as a result of a Power Range High Setpoint High Flux (PRHSHF) signal. At the time of the trip the reactor was in Mode 2, Startup, at 0% of rated thermal power and normal operating temperature and pressure.

The PRHSHF trip occurred due to loss of 120 VAC power supplying Power Range Nuclear Instrumentation (PRNI) channel 41. Loss of 120 VAC power to PRNI channel 41 was caused by failure of the NN-11 inverter transformer that supplies power to bus NN-01. Previous to the trip, PRNI channel 44 was placed out of service (in tripped condition) to facilitate core physics testing. Since PRNI channel 44 was already in the tripped condition, failure of the power supply to PRNI channel 41 satisfied the 2 of 4 logic necessary to initiate the reactor trip.

The other four inverter transformers as well as the replacement transformer were tested, per Westinghouse Technical Bulletin 84-11 as a precautionary measure, with satisfactory results. The defective transformer will be sent to the General Electric Company to determine the cause of its failure.

All Engineered Safety Features actuated as designed. At no time did this event endanger the public health or safety.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	8 6	— 0 1 0	— 0 0	0 2 OF 0 3

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

On 4/16/86 at 1424 CST, a reactor trip and a Feedwater Isolation (FWIS) occurred as a result of a Power Range High Setpoint (PRHSHF) High Flux signal. At the time of the trip the reactor was in Mode 2, Startup, at 0% of rated thermal power and normal operating temperature and pressure.

Following the trip, the operators stabilized the plant and recovered from the trip per plant operating procedures at approximately 1520 CST on 4/16/86.

The PRHSHF trip occurred due to loss of 120 VAC power supplying Power Range Nuclear Instrumentation (PRNI) channel 41. Loss of 120 VAC power to PRNI channel 41 was caused by failure of the NN-11 inverter transformer (1) that supplies bus NN-01, the power source for PRNI channel 41. Previous to the trip, PRNI channel 44 had been placed out of service (in tripped condition) to facilitate core physics testing following a refueling. Since PRNI channel 44 was already in the tripped condition, failure of the power supply to PRNI channel 41 satisfied the 2 of 4 logic necessary to initiate the reactor trip.

Following identification of inverter failure, the transformer assembly was replaced. An investigation to determine the root cause of the inverter transformer failure proceeded as follows:

1. A search of all NN system Work Requests was conducted to determine if the problem had occurred previously. None were found.

2. An evaluation of inverter loading during Refuel 1 was conducted to determine if the inverters were operated unloaded for any amount of time. The vendor manual indicated this could lead to transformer magnetic overheating and failure. Inverter loads throughout Refuel 1 were nearly the same as during normal plant operation.

3. A search of NPRDS data was conducted to determine if other plants had experienced similar failures. The root causes were indeterminate for similar failures.

4. Westinghouse Technical Bulletin 84-11 was re-evaluated for applicability. This bulletin recommended conducting of a hi-pot test to determine insulation integrity on inverter transformers in service less than six months. Initial evaluation of 84-11 determined that Callaway inverter transformers did not require this test since the devices had been in service greater than six months with no failures in this period. Re-evaluation of this Technical Bulletin, following this trip, led to testing of the replacement NN-11 transformer as well as the other redundant transformers. These transformers tested satisfactorily.

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

The defective transformer will be sent to General Electric for fault analysis. Results of this analysis will be transmitted in a supplementary report.

All Engineered Safety Features actuated as designed. At no time did this event endanger the public health or safety.

Previous occurrences: none

Footnotes

(1) IEEE Standard 805-1983 System - EI
IEEE Standard 803-1983 Component - XFMR
Manufacturer - General Electric Company
Ferro-resonant output transformer

UNION ELECTRIC

Callaway Plant

May 15, 1986

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

ULNRC-1313

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 86-010-00
REACTOR TRIP ON POWER RANGE
HIGH SETPOINT HIGH FLUX SIGNAL

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) concerning a reactor trip on a Power Range High Setpoint High Flux signal.

GL Randolph

G. L. Randolph
Manager, Callaway Plant

RPA TPS DBP

GLR/RDA/TPS/DBP/drs
Enclosure

cc: Distribution attached

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cc distribution for ULNRC-1313

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