

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 B	PAGE (3) 1 OF 0 3
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TITLE (4)
Reactor Trips Upon Loss of Service Air

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)	
1	1	05	84	84	059	06	1	20	5	8	4	0 5 0 0 0
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OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>20.402(b)</td> <td><input checked="" type="checkbox"/></td> <td>50.73(a)(2)(iv)</td> <td><input type="checkbox"/></td> <td>73.71(b)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>20.406(a)(1)(i)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(v)</td> <td><input type="checkbox"/></td> <td>73.71(c)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>20.406(a)(1)(ii)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(vi)</td> <td><input type="checkbox"/></td> <td>OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>20.406(a)(1)(iii)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(vii)</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>20.406(a)(1)(iv)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(viii)(A)</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>20.406(a)(1)(v)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(viii)(B)</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>50.73(a)(2)(ix)</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> </table>	20.402(b)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>	20.406(a)(1)(i)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	73.71(c)	<input type="checkbox"/>	20.406(a)(1)(ii)	<input type="checkbox"/>	50.73(a)(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	<input type="checkbox"/>	20.406(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(vii)	<input type="checkbox"/>			20.406(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	<input type="checkbox"/>			20.406(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	<input type="checkbox"/>					50.73(a)(2)(ix)	<input type="checkbox"/>		
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LICENSEE CONTACT FOR THIS LER (12)	
NAME William H. Stahl - Superintendent, Engineering	TELEPHONE NUMBER AREA CODE: 3 1 4 6 7 6 - 8 4 6 9

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS
B	LID	CIOIN	C161010	N					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

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

On 11/5/84 at 1156 CST and 11/6/84 at 0450, with the plant in Mode 1 at 45% power and 16% power, respectively, air lines supplying the steam generator (S/G) feedwater regulating valves failed which caused Engineered Safety Feature (ESF) actuations along with Reactor Trips.

The first event was due to a failure of the air line connection to the feedwater control valve, FCV-530, for S/G 'C.' Upon the loss of air supply, FCV-530 failed closed resulting in a lo-lo level in S/G 'C' which caused a Reactor Trip, Turbine Trip, Feedwater Isolation Signal (FWIS), Auxiliary Feedwater Actuation Signal (AFAS) and S/G Blowdown Isolation Signal (SGBIS).

The second event was due to a failure of the air line to the 'A' feedwater pump recirculation valve FV-2B causing it to fail open and closed then completely open. The resultant feedwater flow oscillations produced a high level in S/G 'C' causing a Turbine Trip, FWIS, AFAS and SGBIS. Due to the FWIS and AFAS, S/G levels began to decrease and at 0454 a lo-lo level on S/G 'D' caused a Reactor Trip.

The air line failures were due to improper material applications and resulting fatigue cracking caused by the vibrations imposed on the air lines during feedwater system operation. Temporary repairs using copper or stainless steel tubing were made and permanent design changes to install additional hangers are being made in accordance with administrative procedures.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3 8 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 5	9	0 0	0 2	OF	0 3

TEXT (if more space is required, use additional NRC Form 388A (1) (17))

This LER is submitted pursuant to 10 CFR 50.73(a)(2)(iv) in regard to two separate cases of service air line failures within the steam generator (S/G) feedwater system resulting in Engineered Safety Feature (ESF) actuations and Reactor Trips. In both instances all ESF actuations responded as designed. A description of these events is as follows:

- On 11/5/84 at 1156 CST a Reactor Trip occurred when a lo-lo level signal was received on S/G 'C.' The plant was in Mode 1, 45% reactor power, at the time of the incident. The service air line manifold common to the S/G Feedwater Control Valves sheared at the connection which channels the service air supply for S/G 'C' Feedwater Control Valve FCV-530 causing it to fail closed. Approximately 50 seconds after FCV-530 closed a lo-lo level signal on S/G 'C' caused a Reactor Trip accompanied by a Turbine Trip, Feedwater Isolation Signal (FWIS), Auxiliary Feedwater Actuation Signal (AFAS) and Steam Generator Blowdown Isolation Signal (SGBIS).

The service air line was repaired and by 1343 the feedwater isolation valves were reopened, auxiliary feedwater secured and S/G blowdown reinstated. Mode 1 was re-entered at 0318 on 11/6/84.

- On 11/6/84 at 0450 a high level signal on S/G 'C' resulted in a Turbine Trip, FWIS, AFAS and SGBIS. At 0454 a lo-lo level signal on S/G 'D' caused a Reactor Trip. The plant was in Mode 1, 16% reactor power at the time of the event.

Subsequent investigations revealed that the service air line to Feedwater Recirculation Valve FV-2B had ruptured causing FV-2B to fail in an intermittent fashion initially, which caused the recirculation valve to oscillate and finally to open. The loss of feedwater through FV-2B caused the feedwater control valves to open. Operators also compensated for the lost feedwater flow by increasing the flowrate through the main feedwater pump PAE01A which was in manual control. The resultant feedwater flow oscillations caused the high level signal on S/G 'C' producing a Turbine Trip, FWIS, AFAS and SGBIS. Due to the FWIS and AFAS, S/G levels began to shrink and at 0454 a lo-lo level on S/G 'D' caused a Reactor Trip.

Both air line failures were due to improper material application which resulted in fatigue cracking caused by the vibration imposed on the air lines during feedwater system operation. To prevent future failures the following changes are being incorporated as indicated below:

- The bypass tubing nipples previously installed on the air line manifold to the feedwater control valves have been replaced with copper tubing.

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		8 4	0 5 9	0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 358A (1) (17))

2. Stainless steel tubing has been installed from the air line manifold to the feedwater control valve I/P converters.
3. A design change is being evaluated which would add a support to the air line upstream of the manifold for the feedwater control valves. This evaluation is expected to be complete by 2/15/85.
4. Temporary modifications have been installed for hangers and flexible air lines for the feedwater recirculation valves. A design change has been submitted to make these modifications permanent. An evaluation should be complete by 2/15/85.

No radiation was released and at no time was the health and safety of the public degraded as a result of these incidents.

Previous occurrences: none

DMB

UNION ELECTRIC COMPANY
CALLAWAY PLANT

MAILING ADDRESS:
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December 5, 1984

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

ULNRC-989

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 84-059-00
INADVERTENT ENGINEERED SAFETY FEATURES ACTUATION

Gentlemen:

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) concerning inadvertent Engineered Safety Features actuation and Reactor Trips.

S. E. Miltenberger
S. E. Miltenberger
Manager, Callaway Plant

WHSt/WRR/RCW/drs
Enclosure

cc: Distribution attached

DEC 10 1984

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cc distribution for ULNRC-989

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