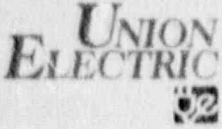


Callaway Plant
Post Office Box 62
Fulton, Missouri 65251

December 19, 1990



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

ULNRC-2345

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 90-015-00
ENGINEERED SAFETY FEATURE ACTUATION DUE TO A SPURIOUS
MAIN GENERATOR BREAKER PROTECTIVE FLASHOVER RELAY ACTUATION

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73 (a)(2)(iv) to report an Engineered Safety Feature Auxiliary Feedwater Actuation due to the spurious actuation of a protective flashover relay for the main generator output breaker V55.

A handwritten signature in cursive script, appearing to read "J. D. Blosser".

J. D. Blosser
Manager, Callaway Plant

^{TPS}
JDB/TPS/JGB/djr

Enclosure

cc: Distribution attached

9101020232 901219
PDR ADOCK 05000483
S PDR

Handwritten initials "JF" and the date "11/11".

cc distribution for ULNRC-2345

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-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) Callaway Plant Unit 1
DOCKET NUMBER (2) 050004831 OF 05
PAGE (3) 1 OF 05

TITLE (4) Engineered Safety Feature Actuation Due To A Spurious Main Generator Breaker Flashover Relay Actuation

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)
11	19	90	90	015	00	12	19	90		05000
										05000

OPERATING MODE (9) 1
POWER LEVEL (10) 010

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

20.402(b)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	<input type="checkbox"/>	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(vii)(A)	
20.406(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(vii)(B)	
20.406(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: J. F. Hogg, Superintendent of Maintenance
TELEPHONE NUMBER: 314 676-8204

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
X	FK	BKR	I 212	No					

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 11/19/90 at 2209 CST, a licensed Reactor Operator closed main generator output breaker V53 and loaded the main generator to 60MWe. On 11/19/90 at 2219 CST, an Engineered Safety Features (ESF) Auxiliary Feedwater Actuation occurred when a protective flashover relay for main generator output breaker V55 cleared the 345KV switchyard bus 'B'. This resulted in a complete loss of power to the 4.16KV Safeguards Class 1E Bus NB01 and the subsequent actuation of the Turbine Driven Auxiliary Feedwater Pump and Diesel Generator. The plant was in Mode 1 - Power Operations at 10% reactor power.

Utility Maintenance personnel inspected and extensively tested the V55 breaker. No cause for the flashover relay actuation could be found. On 11/19/90 at 2355, the normal NB01 power lineup was restored and the above ESF systems were restored to their normal standby lineup. V55 was reassembled and successfully closed on 11/25/90 at 2141.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 05000483	LER NUMBER (8)			PAGE (3)	
		YEAR 90	SEQUENTIAL NUMBER 015	REVISION NUMBER 00	02	OF 05

TEXT (If more space is required, use additional NRC Form 386A's) (17)

BASIS FOR REPORTABILITY

On 11/19/90 at 2219 CST, an Engineered Safety Features (ESF)⁽¹⁾ Auxiliary Feedwater Actuation (AFAS) occurred when a protective flashover relay, 50FO-V55⁽²⁾, deenergized the 345KV switchyard bus 'B'⁽³⁾ by opening the offsite feeder breakers and thus causing a loss of power to the 4.16KV Class 1E Safeguards Bus NB01. This automatic, unplanned ESF actuation is reported pursuant to 10 CFR 50.73 (a)(2)(iv).

CONDITIONS AT THE TIME OF EVENT

Mode 1 - Power Operations; 10 percent Reactor Power

DESCRIPTION OF EVENTS

On 11/19/90 at 2209 CST, a licensed Reactor Operator closed main generator output breaker V53 and loaded the main generator to 60MWe.

At 2219, a protective flashover relay, 50FO-V55, associated with generator output breaker V55⁽⁴⁾ actuated and cleared the 345KV switchyard bus 'B' by opening the offsite feeder breakers V45 and V85 (see attached drawing). The loss of power to switchyard bus 'B' resulted in a loss of power to the 4.16KV Class 1E Safeguards Bus, NB01. The undervoltage on NB01 caused the 'A' Diesel Generator⁽⁵⁾ to successfully start and load NB01, the shutdown sequencer to actuate, and initiation of an AFAS which started the Turbine-Driven Auxiliary Feedwater Pump.⁽⁶⁾ On 11/19/90 at 2355, the normal NB01 power lineup was restored and the above ESF systems were restored to their standby lineup. The Mode 1 power ascension was continued.

ROOT CAUSE

No cause for the V55 flashover relay actuation could be determined.

INVESTIGATION ACTIONS COMPLETED

On 11/20/90, utility Maintenance personnel obtained moisture samples of the breaker SF₆ gas. The SF₆ moisture content was determined to be acceptable for samples measured both onsite and offsite. In addition, utility Relay/Test and Maintenance personnel performed a power factor test of V55. Results of this test fell within an acceptable range.

(continued)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST, 500 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) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3 9 0	LER NUMBER (6)		PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		0	15	0	03 OF 05

TEXT (If more space is required, use additional NRC Form 386A's) (17)

On 11/21/90, V55 was degassed and physically opened to allow for further inspection and troubleshooting. No evidence of a fault could be detected by utility personnel or a technical specialist contracted for this event. The voltage grading capacitors were removed and individually power factor tested. The results were determined to be within an acceptable range. With the capacitors removed, the breaker bushings were electrically isolated from the breaker internals allowing for each bushing to be individually tested. The bushings were determined to be within acceptable power factor ranges. The breaker internals (i.e. including operating rod contacts, buffer blocks, etc.), were then power factor tested with acceptable results. The breaker was resealed, a vacuum was pulled for 36 hours, and at approximately 1200 on 11/23/90, the SF₆ gas was restored to the breaker. V55 was once again power factored with acceptable results.

Concurrent with the testing performed on V55, utility Relay/Testing personnel developed and performed a functional test of the relay circuit with acceptable results on all three phases. At that point, no cause for the flashover relay actuation could be determined. (Breaker V55 is a Model 362 manufactured by ITE Gould)

Based on the above test results, vendor consultation and the technical specialist's recommendations, it was decided to restore the breaker to service. An oscillograph was installed to monitor the breaker at 1/2 the value at which the flashover relay actuates. This test was performed to establish the approximate conditions that were present when the flashover relay actuated on 11/19/90. This included a twenty minute delay with 345KV established on both sides of the open breaker. At the completion of the test on 11/25/90, V55 was closed without incident. No indications of a flashover current were received on the oscillograph, and no actuation conditions have been observed since the breaker closure.

No further corrective action is planned.

SAFETY SIGNIFICANCE

The ESF systems functioned as required by plant design. Throughout the event, the redundant 4.16KV Class 1E Safeguards Bus, NB02, remained powered from its normal offsite supply. This event posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD REGARDS 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) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3 9 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	15	0	0	04

NOTE: If more space is required, use additional NRC Form 388A's (17)

PREVIOUS OCCURRENCES

LER 89-008-00 Although the cause of the loss of power to NB01 in LER 89-008-00 was the spurious actuation of flashover relay 50F0-V55, the relay actuation was due to a loose calibration set screw. No root cause determination could be made for the 11/19/90 V55 flashover relay actuation.

FOOTNOTES

The system and component codes listed below are from IFL Standards 805-1984 and 8034-1983, respectively.

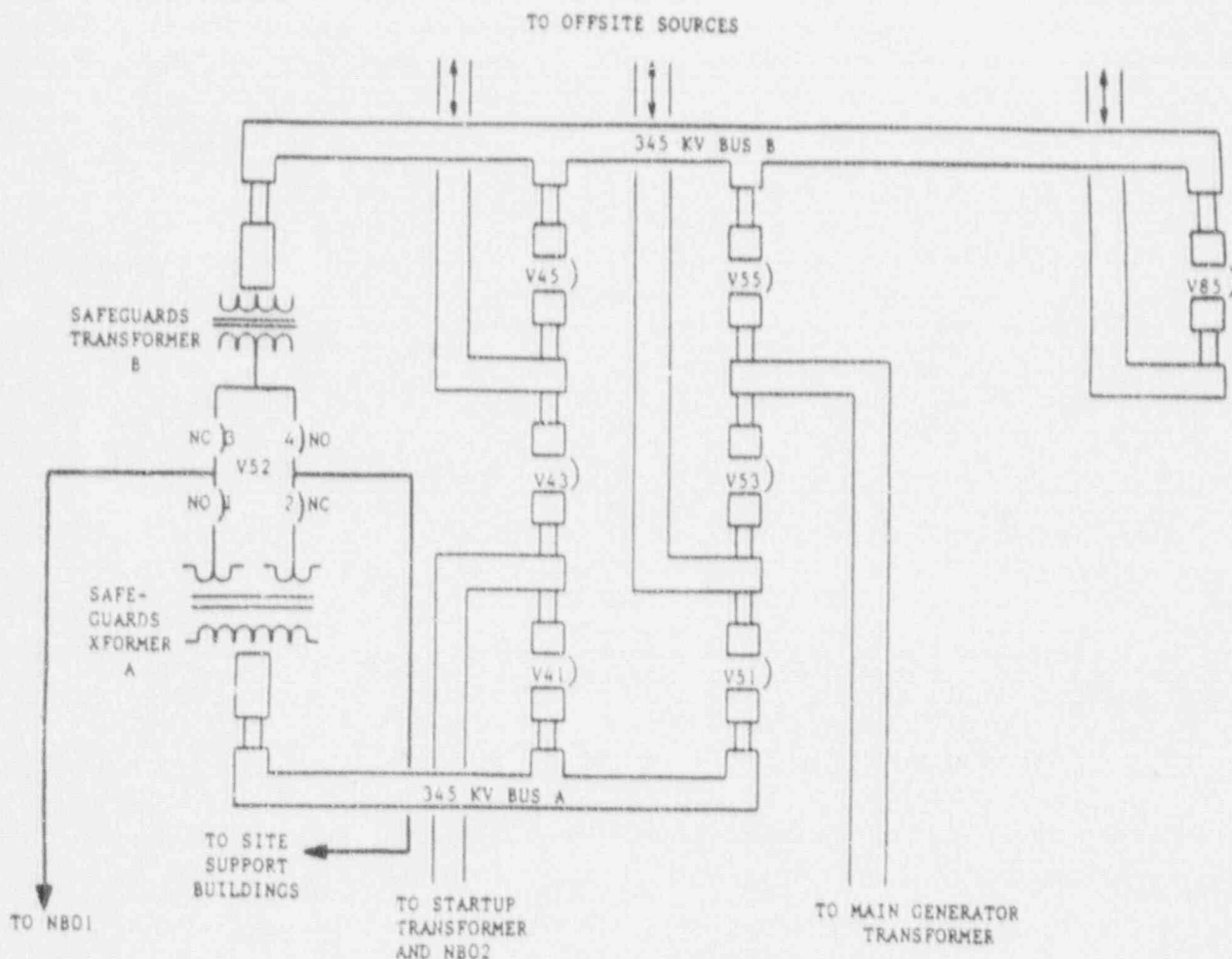
- 1) System JE
- 2) System FK, Component - RLY
- 3) System FK, Component - BU
- 4) System FK, Component - BKR
- 5) System EK, Component - DG
- 6) System BA, Component - P

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-130), U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503.

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

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



CALLAWAY PLANT SWITCHYARD