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

May 25, 1990
LIC-90-0392

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 90-12 for the Fort Calhoun Station

Please find attached Licensee Event Report 90-12 dated May 25, 1990. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv). A one week extension in submitting this report was agreed to by Mr. Les Constable of NRC Region IV.

If you should have any questions, please contact me.

Sincerely,

W. G. Gates
Division Manager
Nuclear Operations

WGG/tcm

Attachment

c: R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector
INPO Records Center
American Nuclear Insurers

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NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
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-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Fort Calhoun Station Unit No. 1	0 5 0 0 0 2 8 5	1 OF 0 14

TITLE (4)
Inadvertent Diesel Generator Start

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)
									N	0 5 0 0 0
0 4	1 8	9 0	9 0	0 1 2	0 0	0 5	2 5	9 0		0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		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
John C. Adams, Reactor Engineer	AREA CODE 4 0 2 — 5 3 1 - 1 6 1 3 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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On April 18, 1990, during Emergency Diesel testing, an unplanned start of Diesel Generator D-1 occurred. The diesel generator auto-started as a result of trip testing that was being performed on the 345KV system at the same time.

An unplanned start of an emergency diesel generator is an actuation of a Emergency Safeguards Feature. A four-hour notification to the NRC was made at 0201, in accordance with 10 CFR 50.72(b)(2)(ii).

The primary cause of this event was inadequate equipment configuration control during testing. Contributing to this was inadequate communications among the personnel involved and inadequacy of the procedure used. Corrective actions include review and revision of appropriate administrative controls. Also, information on this event will be provided to licensed operators.

On April 18, 1990, while Fort Calhoun Station Unit No. 1 was in a refueling outage (Mode 5), Emergency Diesel Generator D-1 was tested using Surveillance Test ST-ESF-6, "Diesel Start and Diesel Fuel Oil Transfer Pump". During testing it was discovered that the diesel generator failed to come up to rated speed in the required time. Adjustments were made to the diesel governor and a retest of ST-ESF-6, Appendix D, was scheduled. The retest was scheduled to be completed later that day by the on-coming operations crew. When the retest was started, the control room operator placed the diesel mode selector switch in "Emergency Standby" from "Off Auto", to allow the diesel to be started for the test. The diesel mode switch had been placed in the "Off Auto" position following the completion of ESF testing earlier in the day. When the mode switch was placed in "Emergency Standby" the diesel unexpectedly auto-started and accelerated to idle speed (500 RPM). The operator immediately attempted to shutdown the diesel by depressing the stop diesel push-buttons. To shut down the diesel from the control room, two stop pushbuttons located on the diesel control panel must be depressed simultaneously. The operator observed diesel speed as indicated on the tachometer at the control panel to decrease to approximately 0 RPM, leading him to believe that the diesel was shutdown. The operator then noticed that the diesel immediately accelerated again to 100 RPM, without any intervention on his part. After reaching 100 RPM, engine speed decreased to approximately 0 RPM. Again the operator attempted to shutdown the diesel by depressing the stop push-buttons. This was unsuccessful as the diesel cycled several more times between 0 and 100 RPM. The operator looked over to the electrical distribution control board and saw that the 22 KV and 345 KV breakers had been tripped as a result of breaker testing. He realized an auto-start signal had been initiated to the diesel and proceeded to reposition the diesel mode switch back to "Off Auto" and reset the diesel auto-start lockout relays. However, when the mode switch was placed in "Off Auto" the diesel accelerated to 500 RPM (idle speed), apparently because the shutdown signal had timed out and allowed the diesel to start. The operator again depressed the stop push-buttons in an attempt to shutdown the diesel, but was unsuccessful as speed remained at 500 RPM. The turbine building operator was then dispatched to the diesel room to shutdown the diesel at the local control panel, which he did successfully.

Investigation revealed that the diesel generator auto-started as a result of trip testing that was being performed on the 345KV system at the same time the ESF retest was being performed. The trip testing was being performed by the System Protection group using procedure SP-CP-08-GEN-TC, "Functional Checkout of the Protective Relays in the Main Generator and 345 Bus Control Circuits". A trip test of the 345 KV system was performed only a few seconds prior to when the mode switch for D-1 was taken out of "Off-Auto" for the ESF retest. The trip test activated various relays that provide auto-start signals to both diesel generators. When the control room operator placed the diesel mode selector switch in the "Emergency Standby" position for the ESF retest, D-1 idle started due to the auto-start signal being present. Diesel Generator D-2 did not start because its mode selector switch remained in the "Off Auto" position.

Investigation was conducted into the reason the diesel was unable to be shutdown from the control room. It was determined that the diesel's auto-start circuitry caused it to start and accelerate to idle speed (500 RPM). When the diesel's stop push-buttons were depressed the diesel cycled between 0 and 100 RPM due to a shutdown signal and an auto-start signal being present concurrently.

Because the auto-start lockout relays had not been reset the air start motors attempted to restart the diesel by increasing diesel speed. When the diesel reached a speed of 100 RPM, the air start motors dropped out after a two second time delay. The diesel was unable to start since a shutdown signal is sealed in for approximately 30 seconds after being generated, as would occur when the stop push-buttons are depressed. It is believed that after the operator isolated the auto-start signal by placing the mode switch in "Off Auto" and resetting the lockout relays, the diesel was turning over at a high enough speed (greater than 40 RPM) that it started and accelerated to idle speed, due to the shutdown signal timing out. However, when the operator depressed the stop push-buttons at this time, the diesel should have shutdown. It is believed that the operator did not fully depress both of the push-buttons simultaneously, as is required to stop the diesel.

Investigation following the event revealed that when the stop push-buttons are depressed on D-1, one of the push-buttons "hangs up" slightly, and therefore requires a greater force to fully depress it. At the time, this may have led the operator to believe that both of the push-buttons were fully depressed, when in fact one of the buttons did not make electrical contact. The relays that initiate a shutdown of D-1 were also tested. All relays were found to be operable.

An unplanned start of an emergency diesel generator is an actuation of an Emergency Safeguards Feature. The NRC Resident Inspector was notified, and a four-hour notification was made to the NRC Operations Center at 0201 hours, in accordance with 10 CFR 50.72(b)(2)(ii). This LER is submitted pursuant to 10 CFR 50.73(a)(2)(iv). A one week extension for submitting this report was agreed to by NRC Region IV personnel.

The safety significance of this event has been evaluated as minimal. At the time of the event the plant was in refueling shutdown (Mode 5); plant conditions required that one Low Pressure Safety Injection pump be operable and a backup power supply be available tc be in compliance with plant procedures. All plant loads were supplied from the 161KV off-site power, and diesel generator D-2 was operable and available as backup for shutdown cooling. Based on the condition and operating mode of the plant during this event, it can be concluded that nuclear safety was not adversely affected.

The primary cause of this event was inadequate equipment configuration control during testing. Contributing to this was inadequate communications among the Operations and System Protection personnel involved. Another contributing factor was that the procedure, SP-CP-08-GEN-TC, governing the trip checks of the 345 KV system, did not require that caution tags be placed on the diesel generator mode switches during performance of the test.

The following corrective actions will be implemented as a result of this event:

(1) Procedure SP-CP-08-GEN-TC will be revised to require that caution tags be placed on both diesel mode selector switches until testing is completed. This will serve as a reminder to operations personnel that trip testing may cause an auto-start signal to be initiated to the diesel generators. This revision will be implemented by June 30, 1990.

(2) The shift turnover log format will be revised to include a section on tests in progress and a remarks section for special conditions required by the test. This revision will be implemented by July 30, 1990.

(3) A maintenance work order has been written to check the stop push-buttons on D-1 for unusual movement or high resistance contacts. This work will be completed by June 30, 1990.

(4) This event will be discussed in Operator training. This information will be provided to all licensed operators by September 30, 1990.

(5) Plant management will evaluate present administrative guidance and controls for work which could affect electrical control equipment. The purpose of this evaluation will be to identify programmatic improvements which could prevent unplanned actuations of safety systems. This evaluation will be completed by August 1, 1990. This action was previously identified in LER's 90-06 and 90-08.

This is the fifth LER associated with an inadvertent start of a Emergency Diesel Generator at Fort Calhoun Station. The others are reported in LER's 88-07, 88-14, 88-24, and 90-10. LER's 90-02, 90-06, and 90-08 concern instances of inadvertent ESF actuations on other systems.