Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-4710

David B. Bice
Acting Manager, Licensing
Arkansas Nuclear One

2CAN110908

November 19, 2009

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Licensee Event Report 50-368/2009-004-00
Emergency Diesel Generator Automatic Actuation
Arkansas Nuclear One – Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

Pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A), enclosed is the subject Licensee Event Report concerning an automatic actuation of the Arkansas Nuclear One Unit 2 Emergency Diesel Generator.

There are no commitments contained in this submittal.

Sincerely,

DBB/slc

Enclosure

cc: Mr. Elmo Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
612 E. Lamar Blvd., Suite 400
Arlington, TX 76011-4125

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339-5957
LEREvents@inpo.org

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 8/31/2010

Estimated burden per response to comply with this mandatory information collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE Emergency Diesel Generator Automatic Actuation While Performing Offsite Power Transfer Testing Due to a High Resistance Contact Supplying Voltage to a Synchronizing Check Relay.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	20	2009	2009	004	00	11	19	2009	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

5

10. POWER LEVEL

000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER- Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
David B. Bice, Acting Manager, Licensing	479-858-4710

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	EA	BKR	G080	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ **YES** (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ **NO**

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On September 20, 2009, at approximately 0511 Central Daylight Time, during the performance of planned surveillance testing, the 2K-4A Emergency Diesel Generator automatically started due to an undervoltage signal. An Offsite Power Transfer Test was being performed to test the automatic transfer from the Startup 3 Offsite Transformer (SU3) to the Startup 2 Offsite Transformer (SU2). When the test was initiated, a slow transfer of the Red Train 4160 Volt Electrical Bus 2A1 from SU3 to SU2 occurred instead of the expected fast transfer. The slow transfer of the 2A1 Bus resulted in a momentary loss of power, for approximately two seconds, to the Red Train 4160 Volt Safety Electrical Bus 2A3 which is powered from the 2A1 Bus. The undervoltage condition on the 2A3 Bus caused the 2K-4A Emergency Diesel Generator to auto start as designed, but did not power the 2A3 Bus, since the 2A3 Bus was successfully powered from the 2A1 Bus after the slow transfer completed. The cause of this event was attributed to a high resistance contact on a contact block located in the SU2 to 2A1 Bus Feeder Breaker. This high resistance contact interfered with the voltage supply to the 2A1 Bus Synchronizing Relay, resulting in the slow transfer of the 2A1 Bus. The wiring located on the high resistance contact was subsequently moved to an alternate available contact on the subject contact block with appropriate resistance.

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NARRATIVE

A. Plant Status

On September 20, 2009, at approximately 0511 Central Daylight Time, Arkansas Nuclear One – Unit 2 (ANO-2) was in Mode 5 for a scheduled refueling outage. The Reactor Coolant System (RCS) [AB] Pressurizer level was 85 percent and the RCS temperature was 139 degrees Fahrenheit. The Red Train Shutdown Cooling (SDC) [BP] loop was in service with the Green Train SDC Pump and Containment Spray [BE] pump available in standby.

B. Event Description

During the performance of planned surveillance testing, the 2K-4A Emergency Diesel Generator (EDG) [EK, DG] automatically started. An Offsite Power Transfer Test was being performed to test automatic transfer from the Startup 3 Offsite Transformer (SU3) [EA, XFMR] to the Startup 2 Offsite Transformer (SU2) [EA, XFMR]. This transfer test is accomplished by momentarily using a handheld jumper to simulate the loss of voltage on SU3. This causes the SU3 feeder breaker 2A-113 [EA, BKR] to the 4160 Volt Bus 2A1 (2A1) [EA, BU] to open, which in turn closes a permissive contact in the SU2 feeder breaker 2A-111 [EA, BKR] to Bus 2A1. If SU2 and the 2A1 Bus are synchronized, the SU2 to 2A1 feeder breaker will then close immediately, thus completing a fast bus transfer. If they are not synchronized, the SU2 to 2A1 feeder breaker will not close immediately; instead, 2A1 will momentarily de-energize, then the 2A1 undervoltage relay will close the SU2 to 2A1 feeder breaker, completing a slow bus transfer. When the Offsite Power Transfer Test was initiated, a slow transfer of the 2A1 Bus occurred instead of the expected fast transfer. The slow transfer of 2A1 resulted in a momentary loss of power, for approximately two seconds, to the 4160 Volt Safety Electrical Bus 2A3 (2A3) [EB,BU] which is powered from 2A1. The momentary undervoltage condition on 2A3 caused the 2K-4A EDG to auto start as designed. The EDG did not power 2A3, since 2A3 was successfully powered from 2A1 after the slow transfer completed. During the momentary loss of power, 2A3 automatically shed all loads as designed. This caused the running Shutdown Cooling Pump (Low Pressure Safety Injection Pump 2P-60A) [BP, P] to secure, which resulted in a loss of Shutdown Cooling flow to the Reactor Coolant System for approximately three and one half minutes. Shutdown Cooling flow was successfully restored using the applicable procedure.

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C. Apparent Cause

A failure mode analysis determined that the cause of the event was a loss of one of the voltage inputs that feed the 2A1 Bus synchronizing check relay (125-111) [EA,25], located in the 2A-111 breaker cubicle, due to a high resistance condition on a contact (11-12 contact) [BU, CON] within the 2A-111 contact switch block (General Electric Model SB-12). This high resistance condition blocked one of the voltage inputs to the synchronizing check relay, causing the relay to falsely indicate that the SU2 Transformer and the 2A1 Bus were not synchronized. This condition resulted in a slow transfer of the 2A1 Bus in approximately two seconds, instead of a fast transfer, which would normally be expected to occur within a few electrical cycles.

D. Corrective Actions

Immediate Actions: Wires connected at the 11-12 contacts on the 2A-111 SB-12 contact block were moved to alternate contacts with appropriate resistance. Additional long term corrective actions are being tracked in the Arkansas Nuclear One (ANO) corrective action process.

E. Safety Significance

The event did not prevent the fulfillment of any safety functions, and there were no safety system functional failures. Offsite and onsite emergency power supplies were available during the event. The Shutdown Cooling pump that stopped during the event remained available for restart following the automatic restoration of power, 2 seconds after the initial de-energization of the 2A1 Bus. Additionally, the standby Shutdown Cooling train was available during the event. RCS temperature increased approximately five degrees Fahrenheit during the event; however, no RCS heat up or cool down limits were exceeded.

F. Basis for Reportability

10 CFR 50.73(a)(2)(iv)(A) "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)."

10 CFR 50.73(a)(2)(iv)(B) "The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are: ….. (8) Emergency ac electrical power systems, including: emergency diesel generators (EDGs);"

G. Additional Information

A review of the last five years of reportable events did not reveal any previous similar events reported by ANO pertaining to automatic actuations of systems identified in 10 CFR 50.73(a)(2)(iv)(B) that were caused by high resistance contact failures.

Energy Industry Identification System (EIIS) codes and component codes are identified in the text as [XX].