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Jeremy G. Browning
Site Vice President
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0CAN051303

10CFR 50.73

May 24, 2013

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

Subject: Licensee Event Report 50-313/2013-001-00
Unit-1 Main Generator Stator Temporary Lift Assembly Failure
Arkansas Nuclear One Unit 1 and Unit 2
Docket Numbers 50-313 and 50-368
License Numbers DPR-51 and NPF-6

Dear Sir or Madam:

Pursuant to the reporting criteria of 10CFR 50.73, attached is the subject Licensee Event Report (LER) concerning the collapse of a temporary lift assembly while removing the Arkansas Nuclear One (ANO) Unit 1 Main Generator Stator. This report will address the reporting requirements for both ANO Unit 1 and Unit 2, and satisfies the requirements for a written report within sixty (60) days of a reportable occurrence. Event investigation and cause determination activities for this event are on-going at this time. Therefore, additional information required by 10CFR 50.73 will be provided in a supplemental report, tentatively expected by September 15, 2013.

This document contains a new regulatory commitment which is identified in attachment 2. Should you have any questions concerning this issue, please contact Stephenie Pyle, Licensing Manager, at 479-858-4704.

Sincerely,

Original signed by Mike Chisum for Jeremy Browning

JGB/slc

Attachment 1: Licensee Event Report 50-313/2013-001-00
Attachment 2: List of Regulatory Commitments

cc: Mr. Arthur T. Howell
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

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NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory 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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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 an 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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Arkansas Nuclear One – Unit 1	**05000313**	**1** OF 4

4. TITLE Collapse of a Main Generator Stator Temporary Lift Assembly Results in a Fatality, Multiple Injuries, a Plant Scram, a Notification of Unusual Event, and Dual Unit Structural Damage

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
03	31	2013	2013	- 001 -	00	05	24	2013	**Arkansas Nuclear One-Unit 2**	**05000368**
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

6

10. POWER LEVEL

0

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

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

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Stephenie L. Pyle, Licensing Manager	479-858-4704

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
NA	NA	NA	NA	NA					

14. SUPPLEMENTAL REPORT EXPECTED

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

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
09	15	2013

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

On March 31, 2013, at approximately 0750 CDT, during lifting and removal of the Arkansas Nuclear One Unit 1 (ANO-1) original Main Generator Stator, the temporary lift assembly collapsed, resulting in the Stator falling onto the turbine deck (386' elevation) and rolling down into the ANO-1 train bay (354' elevation) adjacent to Arkansas Nuclear One Unit 2 (ANO-2). The event resulted in one fatality and multiple injuries. At the time of the event, ANO-1 was in refueling MODE 6 and ANO-2 was in MODE 1 at approximately 100 percent power. The event resulted in a loss of offsite power for ANO-1, with both Emergency Diesel Generators (EDGs) starting to supply safety loads. ANO-1 decay heat removal was lost for approximately four minutes. ANO-2 automatically tripped off-line after the vibration from the dropped Stator resulted in the actuation of relays in the ANO-2 switchgear located adjacent to the train bay, subsequently tripping a reactor coolant pump motor breaker. After the reactor trip, emergency feedwater was manually initiated by ANO-2 control room operators. As debris fell into the train bay, an 8-inch firewater pipe was ruptured and the Alternate AC Diesel Generator electrical tie to ANO-1 was severed. At 0923 CDT that same day, water intrusion from the ruptured firewater piping into a 4160 volt breaker resulted in an ANO-2 Startup Transformer lockout, de-energizing a safety bus. An EDG automatically started as designed and supplied the affected safety bus. An ANO-2 Notification of Unusual Event was declared at 1033 CDT due to fire or explosion caused by the electrical fault in the 4160 volt switchgear with indications of bus damage. After damage assessment and repairs, ANO-2 returned to power operation on April 28, 2013. ANO-1 recovery efforts, formal event investigation and cause determination are currently in progress.

NARRATIVE

A. Plant Status

At the time of the event, ANO-1 was in refueling MODE 6 with decay heat removal in service and offsite power available. ANO-2 was in MODE 1 at approximately 100 percent power.

B. Event Description

On March 31, 2013, at approximately 0750 CDT, during lifting and removal of the Arkansas Nuclear One Unit 1 (ANO-1) original Main Generator Stator [TB][GEN] (weighing in excess of 500 tons), the temporary lift assembly collapsed, resulting in the Stator falling onto the turbine deck floor (386' elevation), then rolling down into the ANO-1 train bay (354' elevation) adjacent to Arkansas Nuclear One Unit 2 (ANO-2) and landing on the Stator transportation vehicle parked in the train bay. Upon the failure of the lift assembly, the structural members fell onto the ANO-1 and ANO-2 turbine deck floor resulting in the fatality of one individual and multiple other injuries. As debris fell into the train bay, an 8 inch firewater pipe [KP] was ruptured and the Alternate AC Diesel Generator (AACDG) [EK][BU] electrical tie to ANO-1 was severed, rendering the AACDG unavailable to either ANO-1 or ANO-2.

ANO-1: When the Stator impacted the ANO-1 turbine deck floor, part of the concrete and steel floor structure collapsed onto electrical buses beneath the turbine deck, resulting in a loss of all offsite power to ANO-1. Both ANO-1 Emergency Diesel Generators (EDGs) [EK][DG] automatically started and connected to their respective 4160 volt safety buses as designed. ANO-1 decay heat removal [BP] flow was re-established after being lost for approximately 4 minutes. Offsite power was restored to ANO-1 on April 6, 2013.

ANO-2: Vibration from the dropped Stator resulted in the actuation of relays in the ANO-2 switchgear located adjacent to the train bay, subsequently tripping the 2P-32B Reactor Coolant Pump (RCP) motor breaker [EA][BKR], which in turn resulted in a Core Protection Calculator (CPC) [ID] signal to automatically trip the ANO-2 reactor. The initial plant response to the trip was normal. An anomaly with one of the Main Feedwater Regulating Valves [SJ][FCV] required the ANO-2 Control Room Operators to secure a Main Feedwater Pump [SJ][P] and manually initiate and use the Emergency Feedwater System [BA] for approximately twenty minutes. At 0923 CDT that same day, water intrusion from the ruptured firewater piping into a 4160 volt feeder breaker [EA][BKR] from the ANO-2 Startup Transformer 3 (SU3) [EA][XFMR] resulted in a SU3 lockout, de-energizing one of two safety buses (2A-4) [EB][BU]. The 2K-4B EDG [EK][DG] automatically started as designed and connected to the affected safety bus. The redundant safety bus (2A3) transferred to Startup Transformer 2 [EA][XFMR], and remained connected to offsite power. A Notification of Unusual Event was declared on ANO-2 at 1033 CDT due to fire or explosion caused by the electrical fault in the 4160 volt switchgear with indications of bus damage. With the loss of SU3, 6900 volt buses 2H-1 and 2H-2 de-energized, resulting in a loss of the remaining RCPs and the one running Circulating Water Pump. This resulted in the need to commence a natural circulation cooldown on ANO-2 using the Atmospheric Dump Valves to remove heat from the Steam Generators. ANO-2 achieved MODE 5 (Cold Shutdown) at 0213 CDT on April 3, 2013.

Event Description - continued

As a result of the ANO-1 Stator drop, systematic walkdowns and evaluations of ANO-2 structural damage was initiated to determine the extent of damage, and to determine requirements for the restart of ANO-2. After necessary evaluations and repairs were completed, ANO-2 returned to power operation on April 28, 2013.

C. Event Cause

A Root Cause investigation is currently in progress; therefore the cause(s) of the event have not been determined. Additional information will be provided in a supplemental report as appropriate.

D. Corrective Actions

Major corrective actions completed to date:

- The evaluation and repair of ANO-2 equipment was completed and ANO-2 has returned to full power operation.
- The capability to power ANO-2 buses from the AACDG has been restored.
- A temporary off-site power supply has been provided for ANO-1.
- Necessary fire water equipment to support plant operation has been restored.
- The Stator and lift assembly debris have been removed from the turbine building.

Recovery and repair actions are currently in progress to restore ANO-1 to power operation.

E. Safety Significance Evaluation

This event resulted in significant industrial safety consequences, with one fatality and multiple other injuries.

There was no actual radiological threat to the health and safety of the general public during this event. Plant equipment responded as designed to mitigate the event.

Further evaluation of the safety significance of the event will be available after the Root Cause Evaluation has been completed and will be provided in a supplemental report as appropriate.

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		YEAR	SEQUENTIAL NUMBER	REV. NO.	
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F. Basis For Reportability

This event is reported pursuant to the following criteria:

10CFR 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) of this section.

(B) The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are:
(1) Reactor protection system including: reactor scram or reactor trip
(ANO-2 reactor trip)
(6) PWR auxiliary or emergency feedwater system
(ANO-2 emergency feedwater manual actuation)
(8) Emergency ac electrical power systems, including: emergency diesel generators
(ANO-1: Both EDGs actuated on loss of offsite power)
(ANO-2: "B" EDG actuated)

10CFR 50.73(a)(2)(v)

Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:
(B) Remove residual heat;
(ANO-1 Decay Heat Removal)
(D) Mitigate the consequences of an accident.
(ANO-1 Loss of offsite power)

G. Additional Information

10CFR 50.73(b)(5) states that this report shall contain reference to “any previous similar events at the same plant that are known to the licensee.” NUREG-1022 reporting guidance states that term "previous occurrences" should include previous events or conditions that involved the same underlying concern or reason as this event, such as the same root cause, failure, or sequence of events.

A review of the ANO corrective action program and Licensee Event Reports revealed no relevant similar events.

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

Event investigation and cause determination activities for this event are on-going at this time. Therefore, additional information required by 10CFR 50.73 will be provided in a supplemental report, tentatively expected by September 15, 2013.

Attachment 2 to

0CAN051303

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Provide a supplemental revision to Licensee Event Report 50-313/2013-001-00	X		September 15, 2013