



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-3110

Jeremy G. Browning
Site Vice President
Arkansas Nuclear One

2CAN051405

May 15, 2014

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

Subject: Licensee Event Report 50-368/2014-01-00
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

Pursuant to the reporting requirements of 10 CFR 50.73, attached is the subject Licensee Event Report concerning Operation of Switchgear Rooms' Ventilation Prohibited by Technical Specifications.

There are no new commitments contained in this submittal.

Should you have any questions concerning this issue, please contact Stephenie Pyle, Manager, Regulatory Assurance, at 479-858-4704.

Sincerely,

Original signed by Jeremy G. Browning

JGB/rwc

Attachment: Licensee Event Report 50-368/2014-001-00

cc: Mr. Marc L. Dapas
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

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

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Arkansas Nuclear One – Unit 2	05000368	YEAR	SEQUENTIAL NUMBER	REV. NO.	2 OF 5
		2014 -- 001 -- 00			

NARRATIVE

A. Plant Status

At the time this condition was identified, Arkansas Nuclear One, Unit 2 (ANO-2) was operating at approximately 100% power. No structures, systems or components were out of service at the time of this event that contributed to this event.

B. Event Description

This condition is associated with a 10 CFR 50.59 evaluation performed in 2002. While performing a post-assessment of that evaluation in response to a separate NRC Resident Inspector question, ANO identified a concern with the evaluation. The evaluation is associated with a modification which changed the operation of the ANO-2 switchgear room exhaust fans from automatic (start on high room temperature) to manual start. This modification was necessary to preclude the pressurization of an area which could affect the operability of the Control Room boundary post-accident.

It was determined that the electrical equipment in the switchgear rooms were operable if both service water supplied room coolers in each room were operable. The associated switchgear exhaust fans are not required for switchgear room operability as long as both room coolers in a room are operable.

If a room cooler is taken out of service for planned maintenance, the exhaust fan can be started before removing the cooler from service to maintain operability of the associated switchgear within the room without reliance on post-accident operator action, or the associated Technical Specifications (TSs) for the switchgear equipment can be entered.

The current procedure for removing a room cooler from service is to verify the exhaust fan is operable. It does not require the exhaust fan to be placed in service. The aforementioned caution cards compensate for this condition until further analyses can be completed and procedures subsequently revised.

ANO-2 TS 3.8.2.1 requires a specific list of vital electrical busses to be operable. The ANO-2 switchgear rooms contain a portion of these busses. If less than the full list of busses are operable, the TS requires the inoperable bus(es) to be returned to operable status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Arkansas Nuclear One – Unit 2	05000368	YEAR	SEQUENTIAL NUMBER	REV. NO.	3 OF 5
		2014 -- 001 -- 00			

A subsequent evaluation determined that at 2300 on February 12, 2014, one of the room coolers was removed from service in accordance with procedures and the cooling requirements of the procedures were verified (exhaust fan verified operable, but not placed in service). This room cooler was restored to operation at 1530 on February 13, 2014. This time period exceeds the total of TS allowed outage time and action time of 14 hours to be in HOT STANDBY.

C. Background – System Design

This condition impacts rooms 2100 and 2101, the Red and Green Train Vital 4160V Switchgear Rooms. Room 2100 contains 4160V bus [EB] 2A4 and 480V bus 2B6 [EB]. Room 2101 contains 4160V bus 2A3 and 480V bus 2B5, among other equipment.

Each room has two room coolers. These cooling units take air from the respective switchgear room and returns cooled air to the same area. One of the two cooling units in each switchgear room is normally in stand-by. These coolers are supplied with service water. The unit coolers are designed to maintain normal room temperature at 110 °F DB maximum with 85°F service water available.

The coolers are designed to be operated automatically during a design basis accident (DBA).

The room coolers are safety related and seismic category 1 components.

During normal operation the unit coolers can be started manually from the Control Room.

Each switchgear room is also equipped with an exhaust fan. In the original design, if the switchgear room temperature rises above 120 °F, the room thermostat [IM] starts the exhaust fan to remove the air from the switchgear room to the Controlled Access 2 (CA-2) area. This latter area borders the ANO-2 Control Room.

During normal operation the exhaust fans are off. The fans may be started manually from the Control Room as needed.

It was determined in 2002 during the original tracer gas testing of the Control Room that this configuration increases air in-leakage rates into the Control Room which negatively impacts Control Room dose values. To reduce air in-leakage, Operations opens a door at CA-2 prior to starting the switchgear exhaust fans, eliminating pressurization of CA-2. In order to maintain Control Room habitability during a DBA, the operation of the exhaust fans was changed from automatic control by thermostat (i.e. on at 120 °F) to manual control to permit Operations time to open the CA-2 door..

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Arkansas Nuclear One Unit-2	05000368	YEAR	SEQUENTIAL NUMBER	REV. NO.	4 OF 5
		2014 -- 001 -- 00			

D. Event Cause

The apparent cause of this condition is the inappropriate crediting of operator action in place of an automatic action. See Information Notice 97-78, "Crediting of Operator Actions in Place of Automatic Actions and Modifications of Operator Actions, Including Response Times."

E. Corrective Actions

Operations promptly placed caution cards on the Control Room hand switches and local breakers associated with the exhaust fans.

Additional evaluations are being performed to determine if one room cooler is sufficient to maintain the room and equipment operable.

F. Safety Significance Evaluation

The room coolers provide temperature control for the safety related 4160V bus 2A4 and 480V bus 2B6 room, and the 4160V bus 2A3 and 480V bus 2B5 room. The design of the coolers is to maintain the room temperature such that the electric busses remain operable post-accident. This ventilation system ensures that the ambient air temperature does not exceed the allowable temperature for the equipment. The rooms, busses and room coolers / exhaust fans are arranged in redundant safety related trains.

The exhaust fans originally received an automatic start signal on high room temperature (120 °F) in the event of an accident. This was replaced with manual actions.

Although there have been no events at ANO-2 that would have required long-term cooling using the exhaust fans, the fans could have been placed into service from the Control Room as needed to maintain the ambient air temperature in the room below the allowable temperature for the equipment.

G. Basis for Reportability

This event is reported pursuant to the following criteria:

10 CFR 50.73(a)(2)(i)(B) – Any operation or condition which was prohibited by the plant's Technical Specifications.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Arkansas Nuclear One Unit-2	05000368	YEAR	SEQUENTIAL NUMBER	REV. NO.	5 OF 5
		2014 -- 001 -- 00			

With the requirement of having the exhaust fan operating or entering the TS when one or more room coolers are removed from service, a review of the past three years identified a time in which a room cooler was out of service without the exhaust fan operating for greater than the 14 hours allowed by TS 3.8.2.1 to be in HOT STANDBY.

H. Additional Information

10 CFR 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, Revision 3 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 for the previous three years was performed. While several instances of issues associated with room coolers at ANO, no relevant similar events were identified.

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