

LIC-13-0101
July 31, 2013

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

Reference: 1. Docket No. 50-285
2. Letter from OPPD (L. P. Cortopassi) to NRC (Document Control Desk),
dated April 29, 2013 (LIC-13-0051)

Subject: Licensee Event Report 2013-005, Revision 1, for the Fort Calhoun Station

Please find attached Licensee Event Report 2013-005, Revision 1. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D) and 10 CFR 50.73(a)(2)(vii)(D). There are no new commitments being made in this letter.

If you should have any questions, please contact Terrence W. Simpkin, Manager, Site Regulatory Assurance, at (402) 533-6263.

Sincerely,

A handwritten signature in black ink, appearing to read "LPC", is written over a faint, larger version of the signature.

Louis P. Cortopassi
Site Vice President and CNO

LPC/epm

Attachment

c: A. T. Howell, NRC Regional Administrator, Region IV
J. M. Sebrosky, NRC Senior Project Manager
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Senior Resident Inspector

LICENSEE EVENT REPORT (LER)

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

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 205 55-0001, 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.

| | | |
|---|-------------------------------------|--------------------------|
| 1. FACILITY NAME Fort Calhoun Station | 2. DOCKET NUMBER 05000285 | 3. PAGE 1 OF 5 |
|---|-------------------------------------|--------------------------|

4. TITLE
Control Room HVAC Modification Not Properly Evaluated

| 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 |
| 2 | 27 | 2013 | 2013 | 005 - 1 | | 07 | 31 | 2013 | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |
| | | | | | | | | | | 05000 |

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|--|---|---|---|--|--|--|--|--|--|--|
| 9. OPERATING MODE 5 | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: <i>(Check all that apply)</i> | | | | | | | | | |
| 10. POWER LEVEL 0 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input checked="" type="checkbox"/> 50.73(a)(2)(vii) | | | | | | |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) | | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER | | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A | | | | | | | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|-------------------------------|---|
| FACILITY NAME Erick Matzke | TELEPHONE NUMBER <i>(Include Area Code)</i> 402-533-6855 |
|-------------------------------|---|

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

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
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| 14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i> <input checked="" type="checkbox"/> NO | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
| | | | | |

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

On February 27, 2013, while reviewing a response to an NRC question, an issue was identified where the modification which moved the control room air conditioners condensers from inside the control room to the auxiliary building roof should have obtained prior NRC approval. The condensers are located in close proximity to one another and are protected by a grating that is not rated to withstand a tornado missile. Therefore, it is possible that both the A and B trains could be struck and rendered inoperable by the same missile. The review determined that prior NRC approval had not been obtained for the modification and the condition was entered in to the station's corrective action program. At the time of discovery, the unit was shutdown with fuel removed.

In 1995, organizational work practices lacked technical rigor, resulting in FCS personnel incorrectly concluding that an NRC approved probability methodology for tornado missile protection could be applied to an FCS plant modification via the 50.59 process without obtaining a license amendment.

Missile will be provided to comply with the station's license, as recently amended, prior to plant heatup. Additional corrective actions will be administered by the corrective action process.

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| Fort Calhoun Station | 05000285 | YEAR | SEQUENTIAL NUMBER | REV NO. | 2 | OF | 5 |
| | | 2013 | - 005 - | 1 | | | |

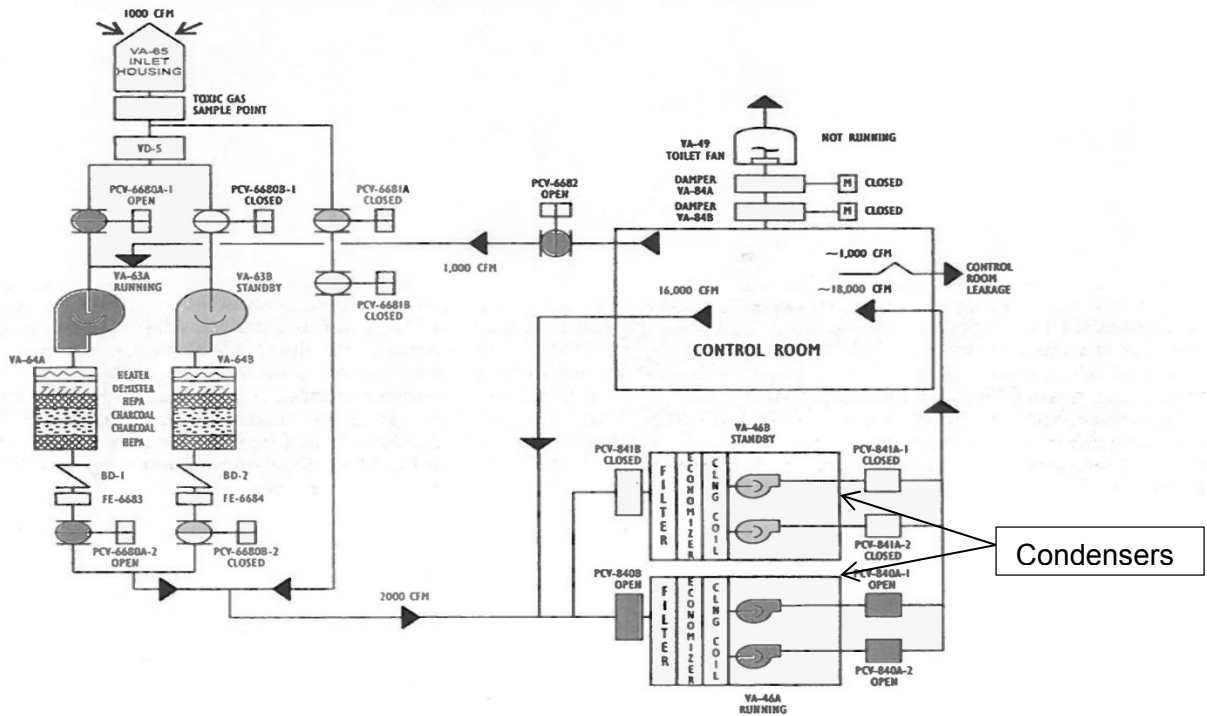
NARRATIVE

BACKGROUND

Fort Calhoun Station (FCS) is a two-loop reactor coolant system of Combustion Engineering (CE) design.

Below is a simplified diagram of the control room ventilation.

**CONTROL ROOM VENTILATION
FILTERED AIR MAKEUP MODE**



Filtered air mode for CR HVAC consists of:
Filtered Air Makeup Fan (VA-63A or VA-63B) takes a suction on the Control Room via PCV-6682 and outside through VA-65 via PCV-6680A(B)-1.

These two paths provide 1000 cfm of filtered air and 1000 cfm of air drawn from the Control Room which combines at the suction of VA-63A(B).

This 2000 cfm passes through filter unit VA-64A(B) to the suction of VA-46A(B) which is circulating 18,000 cfm.

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NARRATIVE

Applicable Technical Specifications:

2.8.2 Refueling Operations – Containment
2.8.2(4) Control Room Ventilation System (CRVS)

Applicability

Applies to operation of the CRVS during CORE ALTERATIONS and REFUELING OPERATIONS inside containment.

Specification

The CRVS shall be IN OPERATION and in the Filtered Air mode.

2.8.3 Refueling Operations - Spent Fuel Pool
2.8.3(5) Control Room Ventilation System (CRVS)

Applicability

Applies to operation of the CRVS during REFUELING OPERATIONS in the spent fuel pool area. The provisions of Specification 2.0.1 for Limiting Conditions for Operation are not applicable.

Objective

To minimize the consequences of a fuel handling accident to the control room staff.

Specification

- (1) The CRVS shall be IN OPERATION and in the Filtered Air mode.
- (2) A spent fuel pool area radiation monitor shall be IN OPERATION.

2.12 Control Room Ventilation System
2.12.1 Control Room Air Filtration System - Operating

Applicability

Applies to the operational status of the control room air filtration system when the reactor coolant temperature Tcold >210°F.

Objective

To assure operability of equipment required to filter control room air following a Design Basis Accident.

Specification

Two control room air filtration trains shall be OPERABLE.

2.12 Control Room Ventilation System
2.12.2 Control Room Air Conditioning System

Applicability

Applies to the operational status of the control room air conditioning system when the reactor coolant temperature Tcold >210°F.

Objective

To assure operability of equipment required to maintain air temperature within the control room following a Design Basis Accident.

Specification

Two control room air conditioning trains shall be OPERABLE.

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NARRATIVE

Fort Calhoun Station was licensed prior to the General Design Criteria and Standard Review Plan. The station was designed in accordance with the 70 draft General Design Criteria published for comment in the Federal Register (32 FR 10213) on July 11, 1967. Criterion 2 of the 70 draft General Design Criteria, which discusses tornadoes and appears in the Updated Safety Analysis Report (USAR), is provided below.

CRITERION 2 - PERFORMANCE STANDARDS

Those systems and components of reactor facilities which are essential to the prevention of accidents which could affect public health and safety or to mitigation of their consequences shall be designed, fabricated, and erected to performance standards that will enable the facility to withstand, without loss of the capability to protect the public, the additional forces that might be imposed by natural phenomena such as earthquakes, tornadoes, flooding conditions, winds, ice and other local site effects. The design bases so established shall reflect: (a) Appropriate consideration for the most severe of these natural phenomena that have been recorded for the site and the surrounding area and (b) an appropriate margin for withstanding forces greater than those recorded to reflect uncertainties about the historical data and their suitability as a basis for design.

USAR Section 9.10.2.4, Revision 22, Control Room Air Conditioning System, contains the following system discussion.

The control room air conditioning system consists of two, air cooled split system package air conditioning units, each rated at 100 percent of the system design capacity, and supply and return ductwork. The system is designed for normal operation at 18,000 cubic feet per minute total air volume with 1000 CFM of outside ventilating air makeup. The air cooled condensers for each Freon refrigeration unit is located on the auxiliary building roof above Room 69. The air condenser units are protected from tornado winds [360 mph] with a windscreen. Standard Review Plan (SRP) Section 2.2.3 was used to design the air cooled condensers windscreen. The SRP criteria was met, therefore, no tornado missile shielding for the air cooled condensers is required.

The control room HVAC is an essential auxiliary support system and hence, is part of the plant's engineered safeguards, as defined in Section 6.

EVENT DESCRIPTION

On February 27, 2013, while reviewing a response to an NRC 0350 question, an issue was identified where the modification which moved the control room air conditioners condensers from inside the control room envelope to the auxiliary building roof should have obtained prior NRC approval. The condensers are located in close proximity to one another and are protected by a grating that is not rated to withstand a tornado missile. Therefore, it is possible that both the A and B trains could be struck and rendered inoperable by the same missile. The review determined that prior NRC approval had not been obtained for the modification and the condition was entered in to the station's corrective action program (CR 2013-04266). At the time of discovery, the unit was shutdown with fuel removed.

This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D): Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident, and 10 CFR 5073(a)(2)(vii)(D): Any event where a single cause or condition caused two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident.

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

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NARRATIVE

CONCLUSION

As previously indicated Condition Report (CR) 2013-04266 questioned the license basis use of probabilistic criteria without prior NRC approval as it relates to the Fort Calhoun Station (FCS) Control Room Air Conditioning System (CRACS) tornado missile protection. To determine the cause of this fault a root cause analysis was conducted. The cause analysis determined that:

In 1995, organizational work practices lacked technical rigor, resulting in FCS personnel incorrectly concluding that a probability methodology for tornado missile protection could be applied to an FCS plant modification via the 50.59 process without obtaining a license amendment.

CORRECTIVE ACTIONS

The control room air conditioners will be provided with missile protection to comply with the station's license, as recently amended, prior to plant heatup. Modifications are in progress to comply with the Amendment No. 272 to the station's license. Additional corrective actions will be administered by the corrective action process.

SAFETY SIGNIFICANCE

A tornado could result in a failure of the CRACS condenser units located on the Auxiliary Building roof. If this occurs, the control room could become uninhabitable due to excessive temperature. Excessive Control Room Temperatures affect both personnel and equipment. If airborne contamination is present operators would be required to don respiratory equipment, or relocate to the Remote Shutdown Panel. If the temperature in the control room exceeds 105 degrees (correlating to 120 degrees in internal cabinets) safety related instruments are challenged, affecting the ability to safely shutdown the plant. Abnormal Operating Procedure (AOP) 13, "Loss of Control Room Air Conditioning," provides guidance on mitigating the loss of cooling. In addition, should conditions deteriorate to the point where control room evacuation is required AOP-7, "Evacuation of Control Room," will allow the operators to safely shutdown the plant as required.

SAFETY SYSTEM FUNCTIONAL FAILURE

This event does result in a safety system functional failure in accordance with NEI-99-02.

PREVIOUS EVENTS

There have not been any previous LERs on the potential impact of tornado generated missiles.