



Omaha Public Power District

444 South 16<sup>th</sup> Street Mall  
Omaha, NE 68102-2247

LIC-13-0120  
August 26, 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 May 3, 2013 (LIC-13-0057)

**Subject: Licensee Event Report 2013-006, Revision 1, for the Fort Calhoun  
Station**

Please find attached Licensee Event Report 2013-006, Revision 1. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B), 10 CFR 50.73(a)(2)(v)(B) and (D), and 10 CFR 50.73(a)(2)(vii). 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,

Louis P. Cortopassi  
Site Vice President and CNO

LPC/rjr/epm

Attachment

c: S. A. Reynolds, Acting NRC Regional Administrator, Region IV  
J. M. Sebrosky, NRC Sr. Project Manager  
L. E. Wilkins, NRC Project Manager  
J. C. Kirkland, NRC Sr. Resident Inspector

(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 20555-0001, or by internet e-mail to [infocollects.resource@nrc.gov](mailto: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	2. DOCKET NUMBER	3. PAGE
Fort Calhoun Station	05000285	1 OF 3

4. TITLE	Use of Teflon in LPSI and CS Pump Mechanical Seals
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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
3	4	2013	2013	006	1	8	26	2013	FACILITY NAME	DOCKET NUMBER 05000

<b>9. OPERATING MODE</b>	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> <i>(Check all that apply)</i>			
5	<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 checked="" 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)
<b>10. POWER LEVEL</b>	<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 checked="" 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)	
	0			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

[illegible]

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>  <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

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

On March 04, 2013, at approximately 1400 CST, while researching requirements for the replacement parts, it was identified that the mechanical seals used in the two low pressure safety injection pumps and the three containment spray pumps are made of a material (Teflon®) that may not maintain the designed integrity of the systems under certain accident conditions. This design has been installed since original plant construction. This issue was discovered while the core was off-loaded.

A causal analysis determined that Omaha Public Power District and its consulting engineering firm failed to specify a compatible material for the pump seals in the original construction specifications.

Replacement of pump seals is scheduled to be completed prior to startup. A review of PED-GEI-10, Material Compatibility Review, will be performed to ensure the restrictions placed on the use of Teflon® are appropriate and a review of engineering change checklists will be performed to ensure the PED-GEI-10 restrictions are preserved.

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

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Fort Calhoun Station	05000285	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
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**NARRATIVE**

**BACKGROUND**

Fort Calhoun Station (FCS) is a two-loop reactor coolant system of Combustion Engineering (CE) design. The three containment spray (CS) and two low pressure safety injection (LPSI) pumps are part of the safety injection system. The CS and LPSI pumps are located outside of containment.

USAR Section 1.2.5, Engineered Safeguards Systems, contains the following information.

The CS system supplies borated water to cool and reduce the pressure of the containment atmosphere following a main steam line break. The pumps take suction from the safety injection and refueling water storage (SIRW) tank. Following a loss of coolant accident (LOCA), during the recirculation mode, the system can be aligned to the suction of the high pressure safety injection pumps (HPSI) to provide a source of subcooled water to supplement long term core cooling.

USAR Section 6.2, Safety Injection System, 6.2.1 Design Bases, states the following.

For a design basis large break LOCA, both the HPSI and LPSI pumps will operate for accident mitigation. For a main steam line break (MSLB) the HPSI, LPSI, and CS pumps will operate.

USAR Section 6.2.3.2, Low-Pressure Safety Injection Pumps, states the following.

The low-pressure safety injection pumps are used to inject large quantities of borated water into the reactor coolant system. They are also used to circulate reactor coolant during shutdown to remove residual and decay heat.

USAR Section 6.3, Containment Spray System, 6.3.1 Design Bases states the following.

The function of the containment spray system is to limit the containment pressure rise by providing a means for cooling the containment following a MSLB. The containment spray system may also function to augment long term core cooling for LOCA during the recirculation mode of operation.

**EVENT DESCRIPTION**

On March 04, 2013, at approximately 1400 CST, it was identified that the mechanical seals used in the two low pressure safety injection pumps and the three containment spray pumps are made of a material (Teflon®) that may not maintain the designed integrity of the systems under certain accident conditions. This seal design has been installed since original plant construction. This issue was discovered while the core was off-loaded by plant personnel researching requirements for the replacement parts during scheduled outage activities.

This report is being submitted pursuant to 50.73(a)(2)(ii)(B) Any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety, 10 CFR 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, and (D) Mitigate the consequences of an accident, and 10 CFR 50.73(a)(2)(vii) Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to (B) Remove residual heat and (D) Mitigate the consequences of an accident."

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**NARRATIVE**

**CONCLUSION**

A causal analysis determined that Omaha Public Power District and its consulting engineering firm failed to specify a compatible material for the pump seals in the original construction specifications.

**CORRECTIVE ACTIONS**

Replacement of pump seals is scheduled to be completed prior to startup.

A review of PED-GEI-10, Material Compatibility Review, will be performed to ensure the restriction placed on the use of Teflon® is appropriate.

A review of engineering change checklists will be performed to ensure the PED-GEI-10 restrictions are preserved.

**SAFETY SIGNIFICANCE**

Failure of Teflon® seals may have hindered the pumps' ability to operate in post-accident conditions. A failure of one or more pumps could have resulted in insufficient cooling water to keep the core and the containment cooled as to prevent core damage and minimize the radiological consequences.

The operation of the CS Pumps is required in a MSLB and the operation of the LPSI pumps is required in post-LOCA conditions. In addition, the pumps are used in Shutdown Cooling (SDC) operation. Technical Specifications limit the leakage from the Engineered Safety Features (ESF) to 3800 cubic centimeters (cc)/hour and the ESF leakage has been used as an input in the Radiological Consequences calculations for the Control Room and off-site doses as well as the Electrical Equipment Qualification (EEQ) in the Auxiliary Building.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

This event does result in a safety system functional failure in accordance with Nuclear Energy Institute, NEI-99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6.

**PREVIOUS EVENTS**

Twenty LERs with event dates since March 4, 2010, were identified with the same reporting criteria.

Five of the LERs, 2012-002, 2012-009, 2012-015, 2012-017, and 2013-011, are all related to Electrical Equipment Qualification program issues. However, the issues identified in LER 2013-006 are latent conditions that were recently identified and any corrective actions from these previously reported events would not have prevented this condition.