

Omaha Public Power District

444 South 16th Street Mall
Omaha, NE 68102-2247

10 CFR 50.73

March 7, 2014
LIC-14-0028

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

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40
NRC Docket No. 50-285

Reference: none

Subject: Licensee Event Report 2014-001, Revision 0, for the Fort Calhoun Station

Please find attached Licensee Event Report 2014-001, Revision 0. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(A), 50.73(a)(2)(i)(B) and 10 CFR 50.72(a)(2)(v)(B). No commitments are being made in this letter.

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

Respectfully,

Louis P. Cortopassi
Site Vice President and CNO

LPC/epm

Attachment

c: J. M. Sebrosky, NRC Sr. Project Manager
M. L. Dapas, NRC Regional Administrator, Region IV
J. C. Kirkland, NRC Sr. 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 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

1. FACILITY NAME Fort Calhoun Station			2. DOCKET NUMBER 05000285			3. PAGE 1 OF 5							
4. TITLE Reactor Shutdown due to Sluice Gate Failure													
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			
01	08	2014	2014	- 001 - 00		3	7	2014	FACILITY NAME	DOCKET NUMBER			
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)										
			<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input 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)							
10. POWER LEVEL 100			<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 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 checked="" 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input 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 (Include Area Code) 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			
14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)						<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)													
<p>At approximately 2230 Central Standard Time (CST), on January 8, 2014, CW-14C, Traveling Screen Sluice Gate, motor operator shaft was found damaged (bent) by Operations personnel. At 2330 CST a large block of ice buildup was observed on top of the sluice gate caused by a pinhole leak in the backwash piping located directly above the CW-14C gate. At 0250 CST, January 9, 2014, Operations unsuccessfully attempted manual closing of CW-14C. At 0315 CST the station entered TS 2.0.1(1) due to all raw water (RW) pumps being declared inoperable. At 0518 CST the station commenced a reactor shutdown. At 0900 CST the station completed the reactor shutdown.</p> <p>The root cause was determined to be that CW-14C MOV torque setting was at a value that allowed the stem to be bent.</p> <p>CW-14C was lowered and then verified closed by divers. The flooding strategy for the Intake Structure was met at 0350 CST on January 10, 2014. RW Pumps AC-10A, AC-10B, AC-10C and AC-10D were declared operable and TS 2.0.1(1) was exited.</p>													

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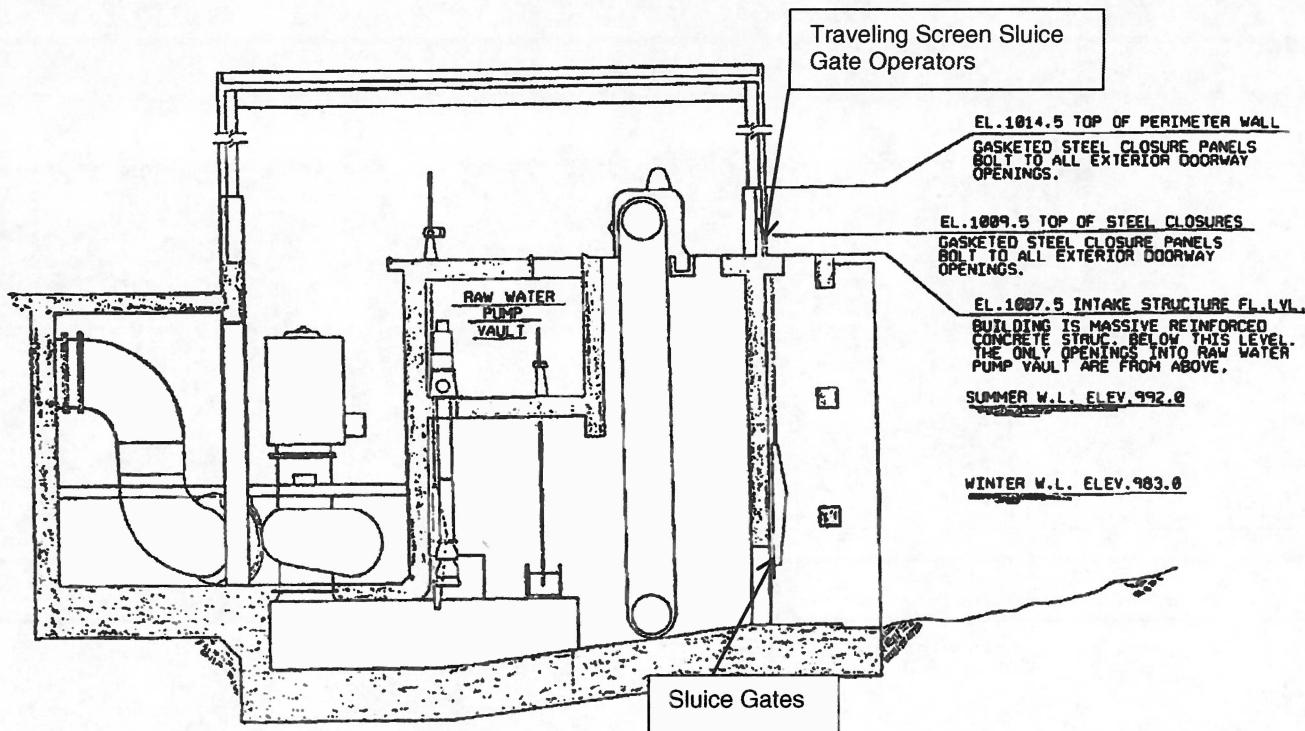
NARRATIVE**BACKGROUND**

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

Four raw water pumps are installed in the intake structure pump house to provide screened river water to the component cooling heat exchangers.

Protection for the raw water pumps and their drives against floods is provided at three elevations. The pumps are permanently protected against any water level up to elevation 1,007.5 feet by the Class I concrete substructure of the intake building. Protection against the 1,009.5-foot and 1,014-foot floods is provided by gasketed steel closures at exterior doorway openings and the screen wash discharge trough. The water level inside the intake cells can be controlled by pre-positioning the exterior sluice gates (i.e., before floodwater reaches the elevation that prevents access to the sluice gate manual actuators) to severely restrict the inflow into the cells. Intake cell level is then controlled by varying the raw water pump(s) output to remove the inlet flow.

Updated Safety Analysis Report (USAR) Figure 9.8-1 is provided below for reference.



The basic safety related function of the raw water (RW) system is to provide a cooling medium for the component cooling water system. The raw water system also provides direct cooling for the following safety related components in the event that the component cooling water system is unavailable: the shutdown cooling heat exchangers, the high/low pressure safety injection pump bearing oil and seal coolers, the containment spray pump bearing oil and seal coolers, and the control room air conditioners.

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NARRATIVE

Technical Specification (TS), Limiting Condition for Operation (LCO) 2.4(1)a, Containment Cooling, defines the minimum requirements for raw water pump operability for reactor criticality (except for low-temperature physics tests). The reactor may be made critical with one inoperable raw water pump; however, LCO action statements shall apply.

TS 2.4(1) also states:

- b. During power operation one of the components listed in (1)a.i. or ii. may be inoperable. If the inoperable component is not restored to operability within seven days, the reactor shall be placed in hot shutdown condition within 12 hours. If the inoperable component is not restored to operability within an additional 48 hours, the reactor shall be placed in a cold shutdown condition within 24 hours.
- c. For cases involving Raw Water pump inoperability, if the river water temperature is below 60 degrees Fahrenheit, one Raw Water pump may be inoperable indefinitely without applying any LCO action statement. When the river water temperature is greater than 60 degrees Fahrenheit, an inoperable Raw Water pump shall be restored to operability within 7 days or the reactor shall be placed in a hot shutdown condition within 12 hours. If the inoperable Raw Water pump is not restored to operability within an additional 48 hours, the reactor shall be placed in a cold shutdown condition within 24 hours.

FCS TS 2.0.1(1) requires:

In the event a Limiting Condition for Operation and/or associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and < 300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless corrective measures are completed that permit operation under the permissible action requirements for the specified time interval as measured from initial discovery or until the reactor is placed in an Operating Mode in which the specification is not applicable. Exceptions to these requirements shall be stated in the individual specifications.

EVENT DESCRIPTION

At approximately 2230 Central Standard Time (CST), on January 8, 2014, CW-14C, TRAVELING SCREEN SLUICE GATE, motor operator shaft was found damaged (bent) by Operations personnel. At 2330 CST a large block of ice buildup was observed on top of the sluice gate caused by a pinhole leak in the backwash piping located directly above the CW-14C gate. At 0250 CST, January 9, 2014, Operations unsuccessfully attempted manual closing of CW-14C. At 0315 CST the station entered TS 2.0.1(1) due to all RW pumps being declared inoperable. At 0518 CST the station commenced a reactor shutdown. At 0542 CST the NRC Headquarter Operations Office (HOO) was notified of the inoperability of the RW pumps (10 CFR 50.72(b)(3)(v)(B) and TS required shutdown 10 CFR 50.72(b)(2)(i) (Event Notification (EN) 49703 and 49704). At 0900 CST the station completed the reactor shutdown. This event is being reported per 10 CFR 50.73(a)(2)(i)(A), 50.73(a)(2)(i)(B) and 10 CFR 50.72(a)(2)(v)(B). The issue was entered into the corrective action system as condition report (CR) 2014-00329.

CW-14C was manually lowered and then verified closed by divers. The flooding strategy for the Intake Structure was met at 0350 CST on January 10, 2014. Raw water Pumps AC-10A, AC-10B, AC-10C and AC-10D were declared operable and TS 2.0.1(1) was exited.

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NARRATIVE**CONCLUSION**

Engineering Analysis (EA) 12-018 upgraded the sluice gates to limited-critical quality element (L-CQE). The CW-14 sluice gates had not been previously credited as safe shutdown equipment. Even though the CW-14 sluice gates became credited as safe shutdown equipment, FCS did not treat the sluice gates any different than before the reclassification. Consequently, the valves' motor operators (MOVs) were never entered into the MOV program, additional analyses and preventative maintenance (PM) items were not implemented.

CW-14C torque switch as found setting was different than the last time the switch was adjusted. In April, 2013, the torque switch for CW-14C was set to increment 2.5. The as found value after the event initiating this report was 3.75. Additionally, the torque switch was found preloaded in the open direction – meaning that it would take more torque applied to the valve before the valve would trip on torque in the shut direction. The torque switch was preloaded 2 increments bringing the total value of the torque setting to 5.75, placing the MOV in a condition where it would cause significant damage to the MOV had the stem not bent.

Additionally, the spring pack – the part of the MOV which translates motor torque to the torque limiter switch was unable to complete its function due to the amount of grease that had seeped into the spring plate section. The grease would not allow the spring pack to compress thereby not translating motor torque to the torque limiter switch. The combined effect as described above in addition to the extreme cold temperatures on the intake structure veranda was that the MOV would not have tripped on over-torque before failure of the MOV.

The Root Cause was determined to be that CW-14C MOV torque setting was at a value that allowed the stem to be bent.

CORRECTIVE ACTIONS**Immediate Corrective Actions:**

CW-14C was lowered and then verified closed by divers. The flooding strategy for the Intake Structure was met at 0350 CST on January 10, 2014. Raw water Pumps AC-10A, AC-10B, AC-10C and AC-10D were declared operable and TS 2.0.1(1) was exited.

The covers were opened for CW-14 A, CW-14B, and CW-14F to see if the condition existed with other sluice gates with known bent stem problems (CW-14A/B) and no know history of bent stems (CW-14F). None of the other MOVs inspected had significant preloading.

Long Term Corrective Actions

All CW-14 and CW-15 MOVs will be added to the MOV program having similar treatment to a GL 89-10 MOVs.

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NARRATIVE**SAFETY SIGNIFICANCE**

FCS has evaluated potential flooding scenarios and under the conditions that existed at the time of the event flooding would not have affected the ability of the station to mitigate a flood as a flooding event could not have occurred without several days' notice. The actions needed to allow the station to mitigate a flood were completed in about 24 hours as indicated above.

SAFETY SYSTEM FUNCTIONAL FAILURE

This does not represent a safety system functional failure in accordance with NEI 99-02, Revision 7. The actions needed to allow the station to mitigate a flood were completed in about 24 hours as indicated above.

PREVIOUS EVENTS

LER 2012-019