



Omaha Public Power District

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

LIC-11-0012
February 22, 2011

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

Reference: 1. Docket No. 50-285

Subject: Licensee Event Report 2010-006, Revision 0, for the Fort Calhoun Station

Please find attached Licensee Event Report 2010-006, Revision 0, dated, February 22, 2011. This report is being submitted pursuant to 10CFR50.73(a)(2)(iv)(A). If you should have any questions, please contact me.

Sincerely,

T. R. Nellenbach
Division Manager - Nuclear Operations

TRN/epm

Attachment

c: E. E. Collins, NRC Regional Administrator, Region IV
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Senior Resident Inspector
INPO Records Center

NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0104		EXPIRES: 08/31/2010				
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 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 <div style="text-align: center;">Fort Calhoun Station</div>				2. DOCKET NUMBER <div style="text-align: center;">05000285</div>		3. PAGE <div style="text-align: center;">1 OF 3</div>				
4. TITLE <div style="text-align: center;">Reactor Trip Due to Erroneous Moisture Separator Trip Signal</div>										
5. EVENT DATE			6. LER NUMBER		7. REPORT DATE		8. OTHER FACILITIES INVOLVED			
MONTH	DAY	YEAR	YEAR	SEQUENTI AL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	23	2010	2010	- 006 -	00	02	22	2010	FACILITY NAME	05000
9. OPERATING MODE <div style="text-align: center;">01</div>			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: <i>(Check all that apply)</i>							
			<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER				
10. POWER LEVEL <div style="text-align: center;">100</div>			Specify in Abstract below or in NRC Form 366A							
12. LICENSEE CONTACT FOR THIS LER										
FACILITY NAME <div style="text-align: center;">Erick Matzke</div>						TELEPHONE NUMBER (include Area Code) <div style="text-align: center;">402-533-6855</div>				
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	
14. SUPPLEMENTAL REPORT EXPECTED <input checked="" type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i> <input type="checkbox"/> NO						15. EXPECTED SUBMISSION DATE				
						MONTH	DAY	YEAR		
						4	29	2011		
ABSTRACT <i>(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)</i>										
<p>Fort Calhoun Station was operating at full power (nominal 100 percent). The station was preparing a scaffolding for an upcoming outage when on December 23, 2010, at 1050 Central Standard Time (CST), a reactor trip occurred. The operators entered Emergency Operating Procedure (EOP) 00, "Standard Post Trip Actions." The main steam and feedwater system operated normally. All control rods inserted fully.</p> <p>The apparent cause of the turbine and subsequent reactor trip was the inadvertent actuation, caused by bumping, and sticking of one of four turbine moisture separator high water level turbine trip switches while reactor power was above 15 percent. The root cause investigation is in progress.</p> <p>Following the initial determination of the erroneous moisture separator high level trip signal, immediate actions included: halting all work near the moisture separator sensing lines and level switches, posting the affected areas as "Protected Equipment," and initiating a stop work action for all ongoing scaffold work within the turbine building.</p> <p>An update to this LER will provide the root cause.</p>										

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NARRATIVE

BACKGROUND

The Fort Calhoun Station (FCS) turbine is an 1800 rpm, tandem-compound, non-reheat unit with one high-pressure and two double-flow low-pressure turbines. Saturated steam is supplied to the turbine throttle from the steam generators through four stop valves (SV), numbered 1-4, and four control valves (CV), numbered 1-4. Steam flows through the high-pressure turbine and then through four moisture separators in parallel to two double-flow, low-pressure turbines, each of which exhausts to the condenser.

One of the turbine trips is moisture separator high water level. A moisture separator high water level trip protects the turbine from water induction damage due to a failure of the moisture separator level control system. Each moisture separator has a high water level trip. Actuation of any of the moisture separator high water level trip switches for longer than approximately 10 seconds will cause a turbine trip and subsequent reactor loss of load trip. A loss of load reactor trip results from a turbine-generator trip at power levels greater than 15 percent.

The turbine-generator unit is controlled from the operator's panel in the control room. The turbine-generator control system is composed of solid state devices and servo-amplifiers which generate current, voltage and pulse-type signals.

EVENT DESCRIPTION

On December 23, 2010, at 1050 Central Standard Time (CST), a turbine trip and subsequent reactor trip occurred while operating at a nominal 100 percent power. Immediate response by operations personnel included implementing procedure EOP-00, "Standard Post Trip Actions," and subsequent entry into procedure EOP-01, "Reactor Trip Recovery." Based on plant system response, the trip was uncomplicated.

The station's sequence of events recorder captured the immediate cause of the turbine trip as resulting from an apparent moisture separator high water level trip signal. Within minutes of the trip, a secondary side system engineer performed walkdowns of the moisture separator drain tanks and feedwater heater system and all associated high level dump valves and verified normal post trip conditions. Based on this walkdown and discussion with operations personnel concerning pre-trip conditions, it was concluded by the system engineer that the moisture separator high water level trip signal was erroneous and not the result of an actual moisture separator high water level trip condition.

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NARRATIVE

CONCLUSION

It appears that the direct cause for an erroneous actuation of the moisture separator trip signal is due to on-going work near the vicinity of the moisture separator level switches. Personnel involved in scaffold construction work had been observed working near moisture separator level sensing lines prior to and immediately after the turbine trip. Movement or inadvertent bumping of the sensing lines has been shown to result in momentary actuation of the moisture separator level switches and was suspected to be the initiating cause for generating the erroneous trip signal. Additionally, coincidental sticking of the inadvertently actuated switch in the trip condition for longer than 10 seconds resulted in the turbine trip signal. An update to this LER will provide the root cause.

CORRECTIVE ACTIONS

Following the initial determination of the erroneous moisture separator high level trip signal, immediate actions included: halting all work near the moisture separator level sensing lines and level switches, posting the affected areas as "Protected Equipment," and initiating a stop work action for all ongoing scaffold work within the turbine building. An update to this LER will provide additional information on corrective actions.

SAFETY SIGNIFICANCE

Loss of Load is an analyzed plant transient, and plant response was within the predicted response parameters. All trippable control rods were inserted into the reactor core as required. Decay heat removal by the main steam and feedwater systems was available as required for the transient by plant procedures. While this event resulted in an actuation of the Reactor Protective System due to the Loss of Load from the turbine generator, it did not pose a threat to the health and safety of the public.

SAFETY SYSTEM FUNCTIONAL FAILURE

This event does not result in a safety system functional failure in accordance with NEI-99-02.

PREVIOUS SIMILAR EVENTS

FCS has not had any previous similar reactor trips due to failures of scaffold controls.