



Russell A. Smith  
Plant Manager

January 17, 2011

WO 11-0003

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Subject: Docket No. 50-482: Licensee Event Report 2010-013-00, "Potential Safe Shutdown Unanalyzed Condition Identified during Post-Fire Safe Shutdown Circuit Analysis"

Gentlemen:

The enclosed Licensee Event Report (LER) is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B) regarding an unanalyzed condition that could potentially affect post fire safe shutdown equipment at Wolf Creek Generating Station.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4156, or Mr. Gautam Sen at (620) 364-4175.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell A. Smith".

Russell A. Smith

RAS/rlt

Enclosure

cc: E. E. Collins Jr (NRC), w/e  
G. B. Miller (NRC), w/e  
B. K. Singal (NRC), w/e  
Senior Resident Inspector (NRC), w/e

Handwritten initials in black ink, possibly reading "IE22" over "NRR".

NRC FORM 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0104		EXPIRES: 10/31/2013								
<b>LICENSEE EVENT REPORT (LER)</b>  (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 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 <b>WOLF CREEK GENERATING STATION</b>				2. DOCKET NUMBER <b>05000 482</b>		3. PAGE <b>1 OF 4</b>								
4. TITLE <b>Potential Safe Shutdown Unanalyzed Condition Identified during Post-Fire Safe Shutdown Circuit Analysis</b>														
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED					
MONT H	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME		DOCKET NUMBER			
11	18	2010	2010	- 013	- 00	01	17	2011	FACILITY NAME		DOCKET NUMBER			
											<b>05000</b>			
											<b>05000</b>			
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)											
Mode 1			<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)		
10. POWER LEVEL			<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)(vii)(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 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 <b>Gautam Sen, Manager Regulatory Affairs</b>								TELEPHONE NUMBER (Include Area Code) <b>(620) 364-4175</b>						
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT														
CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONEN T	MANU- FACTURER	REPORTABLE TO EPIX				
14. SUPPLEMENTAL REPORT EXPECTED								15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO														
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)  During performance of a post-fire safe shutdown (PFSSD) circuit analysis, a commitment from Wolf Creek Generating Station LER 2010-003, the following issues were identified for a potential fire in the control room: (1) Certain fuses associated with the Train B emergency diesel generator (EDG) exciter/voltage regulator could fail, that would result in no power being available to supply credited PFSSD equipment. (2) The pressurizer power operated relief valves could fail open and not be closed within 3 minutes as required by the thermal hydraulic analysis. (3) Dampers in the Train B essential service water and Train B EDG rooms could fail and cause the room temperature to exceed the maximum design temperature for the rooms or drop below the minimum design temperature.  The cause was determined to be an inadequate review of control room circuitry for impact on PFSSD. A number of opportunities should have identified the issues including a root cause evaluation conducted in 2007. An hourly fire watch is in place in the control room and procedure OFN RP-017, "Control Room Evacuation," has been revised to address these issues. These issues have low safety significance.														

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## PLANT CONDITIONS PRIOR TO EVENT

Mode 1

100% power

No structures, components, or structures were inoperable that contributed to this event.

## EVENT DESCRIPTION

As a result of a commitment in Wolf Creek Generating Station (WCGS) LER 2010-003, Fire Protection performed a post-fire safe shutdown (PFSSD) circuit analysis for the Train B emergency diesel generator (EDG) [EIS Code: EK] to ensure the diesel generator would remain available in the event of a fire in the control room. On November 18, 2010, during performance of the circuit analysis for the Train B EDG, it was discovered that certain fuses installed within Train B Exciter/Voltage Regulator cabinet would be susceptible to failure in the event of postulated fire-induced hot shorts within the control room. If the fuse fails prior to flashing the field, then the generator will not be capable of generating voltage and no power will be available to supply credited PFSSD equipment.

Additionally, a circuit analysis was performed for all components credited for hot standby following a control room fire as directed by procedure OFN RP-017, "Control Room Evacuation." As a result of that circuit analysis, on December 17, 2010, the following issues were discovered:

1. A fire in the control room could cause the pressurizer power operated relief valves (PORVs) [EIS Code: PZR-RV] to fail open. Actions currently proceduralized in OFN RP-017 may not be sufficient to close the PORVs within 3 minutes as required by the thermal hydraulic analysis. Based on the step sequence in OFN RP-017, it could take approximately 20 minutes to ensure all potential hot short sources are removed.
2. The ventilation alignment in the Train B essential service water (ESW) pump room [EIS Code: MK-DMP] and Train B EDG Room [EIS Code: NB-DMP], in accordance with OFN RP-017, may not be adequate for all outside temperature conditions. A fire in the control room could cause the respective recirculation dampers to fail in any position. In the winter months, if the recirculation damper fails closed, then 100% outside air would be brought into the room with no mixing. This could cause the room temperature to drop below the minimum design temperature. In the summer months, if the recirculation damper fails full open, then maximum recirculation would occur and possibly cause the room temperature to exceed the maximum design temperature.

## BASIS FOR REPORTABILITY

A PFSSD issue identified as a condition where no or insufficient guidance is available to Operators, to readily mitigate the postulated fire induced equipment maloperation, is considered an unanalyzed condition in accordance with Section 50.72(b)(3)(ii)(B). This is based on NUREG 1022, Rev. 2, Section 3.2.4, which provides the following example:

.... if fire barriers are found to be missing, such that the required degree of separation for redundant safe shutdown trains is lacking, the event would be reportable as an unanalyzed condition that significantly degraded plant safety.

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Therefore, 10 CFR 50 Appendix R circuit separation issues that could result in undesired equipment maloperation with a resulting adverse affect on PFSSD capability, is considered by Wolf Creek Nuclear Operating Corporation (WCNOC) to be a condition where fire barrier protection is deficient.

As such, WCNOC is reporting these conditions pursuant to 10 CFR 50.73(a)(2)(ii)(B) for any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. Additionally, WCNOC made two eight-hour Emergency Notification System calls, Event Notifications 46428 and 46488, in accordance with 10 CFR 50.72(b)(3)(ii)(B).

**ROOT CAUSE**

Consistent with the apparent cause conclusion for LER 2010-003, the apparent cause for the issues identified in this LER is inadequate review of control room circuitry for impact on PFSSD following a control room fire. A number of opportunities were found that should have identified the issues including a root cause evaluation conducted in 2007.

**CORRECTIVE ACTIONS**

An hourly fire watch was in place in the control room to mitigate various control room PFSSD circuit issues, including the issues in this LER. The hourly fire watch will not be lifted until all control room PFSSD circuit issues are corrected.

Procedure OFN RP-017, "Control Room Evacuation," was revised to include the following compensatory actions:

1. Instructions were provided to operators on how to replace a blown fuse within the Train B Exciter/Voltage Regulator cabinet. Spare fuses were staged in the emergency equipment locker and procedure STN GP-009, "Emergency Equipment Verification," was revised to list the spare fuses in the attachment
2. Potential 125 VDC sources located in control room that were de-energized later in procedure OFN RP-017, were moved to earlier in the procedure. This will ensure the pressurizer PORVs are closed within the time required by the thermal hydraulic analysis.
3. Directions have been added for operators to monitor room temperature extremes in the Train B ESW pump house and Train B EDG room and take needed actions.

**SAFETY SIGNIFICANCE**

These issues have low safety significance. A fire in the control room of such magnitude and severity as to cause an evacuation and plant shutdown is extremely unlikely. Based on the Fire Hazards Analysis, the combustible loading in the control room is low and interior finish materials meet or exceed the surface flammability requirements of applicable standards. Cables entering the control room are IEEE 383 rated. Large concentrations of cables in the control room trenches are protected with an automatic Halon extinguishing system and automatic smoke detectors are located in the control cabinets and trenches.

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**OPERATING EXPERIENCE/PREVIOUS EVENTS**

LER 2010-003-00 identified that a fire induced hot short could energize the unit parallel relay and place the emergency diesel generator in droop mode of operation. In addition, other circuit issues were identified that could adversely affect the diesel generator voltage regulator. This issue could have prevented operation of the Train B EDG if a fire occurred in the control room involving these circuits.