WOLF CREEK
NUCLEAR OPERATING CORPORATION

Stephen E. Hedges
Site Vice President

April 08, 2010

WO 10-0023

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

Subject: Docket No. 50-482: Licensee Event Report 2010-003-00, "Post Fire Safe Shutdown Issue with the B Emergency Diesel Generator Voltage Control Circuitry"

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.

Commitments made by Wolf Creek Nuclear Operating Corporation in the enclosed LER are identified in the Attachment to this letter.

If you have any questions concerning this matter, please contact me at (620) 364-4190, or Mr. Richard D. Flannigan at (620) 364-4117.

Sincerely,

Stephen E. Hedges

SEH/rlt

Attachment - List of Regulatory Commitments
Enclosure - Licensee Event Report 2010-003-00

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

IE22
NRR

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by WCNOC in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Mr. Richard Flannigan at (620) 364-4117.

REGULATORY COMMITMENT	DUE DATE/EVENT
A postfire safe shutdown (PFSSD) analysis of circuits/components in the control room that could affect OFN RP-017 components credited for PFSSD in the event of a control room fire will be performed.	12/17/2010
A permanent modification will be made to address the PFSSD issue currently covered by temporary modification.	07/28/2011

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
WOLF CREEK GENERATING STATION	05000 482	1 OF 4

4. TITLE

Post Fire Safe Shutdown Issue with the B Emergency Diesel Generator Voltage Control Circuitry

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
										05000
02	09	2010	2010	- 003 -	00	04	08	2010	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☒ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Richard D. Flannigan, Manager Regulatory Affairs	(620) 364-4117

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

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On February 9, 2010, engineering reviewed procedure STN RP-002, "Miscellaneous ISO/BYPASS Switch Testing," for an on-going Technical Specification Equipment Outage (TSEO) on the Train B Diesel Generator (DG). During this review, the system engineer identified that a fire induced hot short could energize the unit parallel relay and place the generator in droop mode of operation. In addition, other circuit issues were identified that could adversely affect the DG voltage regulator. This issue could have prevented operation of the Train B DG if a fire occurred in the control room involving these circuits. This could have prevented a safe shutdown of the plant if a severe fire occurred in the control room that also disabled off-site power. No fire actually occurred and this is a historical design issue that has been in place since construction.

A temporary modification was prepared and implemented prior to the Train B DG being returned to service.

BACKGROUND INFORMATION:

In order to achieve safe shutdown following a fire in the control room, AC power is required to be available to energize pump motors, valve motors and other equipment. Per Appendix R, off-site power is assumed to be lost in the event of a control room fire. At Wolf Creek, Train B was chosen as the credited Train for a control room fire. Train B diesel generator (DG) was designed with control room isolation capability and is considered the assured AC power supply following a control room fire. The Train A diesel generator was not designed with any control room fire isolation capability and is therefore considered unavailable during a control room fire.

PLANT CONDITIONS PRIOR TO EVENT

MODE – 1
Power – 100

EVENT DESCRIPTION

During a review of procedure STN RP-002 by the DG system engineer, in support of an ongoing 72 hour Train B Diesel Generator (DG) [EIIS Code: EK] Technical Specification Equipment Outage (TSEO), it was noticed that the unit parallel relay (UPR) [EIIS Code: EK-RLY] is not isolated from the effects of a control room fire. A short circuit between two conductors or a proper polarity external hot short in contact with one of the conductors could bypass the Train B DG unit parallel hand switch [EIIS Code: EK-HS], located in the control room, and energize the UPR.

During an emergency start of the DG due to an undervoltage or safety injection signal, the UPR would be de-energized, which is the desired state. However, during implementaton of post fire safe shutdown (PFSSD) per procedure OFN RP-017, "Control Room Evacuation," operator action could potentially reenergize the UPR if the hot short persists.

With the UPR energized, a number of contacts change state. In particular, the governor droop control contact will open when the UPR is energized. This places the governor in the droop mode of operation, which is undesired for PFSSD. This could adversely impact the ability to properly operate the Train B DG.

As a result of the review, engineers also noticed that a hot short in the control room voltage control circuit could signal the voltage regulator to reduce or increase the terminal voltage. The input voltage to this circuit is 125 VDC. A 125 VDC short of the proper polarity on particular conductors will energize the associated relay and send a signal to the electronic voltage adjuster or the electronic base adjuster. This would have a competing effect when loads are added to the DG as the automatic voltage adjuster tries to compensate for the added loads. If the hot short is signaling the adjuster to lower the voltage, then the machine terminal voltage may not be sufficient for the added loads. This potentially could affect the ability to energize the NB02 bus using the Train B EDG if a severe fire occurred in the control room.

In addition, engineers also identified that the null meter and the voltage regulator selector switch [EIIS Code: EK-HS], located in the control room, are not adequately isolated from the effects of a control room fire. The voltage potential normally carried by the cable connected to the control room mounted null meter is 15 VDC. A fire in the control room could cause a 125 VDC or 120 VAC hot short to come in contact with this cable, potentially causing damage to the voltage error detector card or the firing circuit input card. If this were to occur, the Train B DG may not function properly.

In addition, engineers also identified that the null meter and the voltage regulator selector switch [EIIS Code: EK-HS], located in the control room, are not adequately isolated from the effects of a control room fire. The voltage potential normally carried by the cable connected to the control room mounted null meter is 15 VDC. A fire in the control room could cause a 125 VDC or 120 VAC hot short to come in contact with this cable, potentially causing damage to the voltage error detector card or the firing circuit input card. If this were to occur, the Train B DG may not function properly.

BASIS FOR REPORTABILITY

This condition is reportable 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 an eight hour Emergency Notification System call, Event Notification 45692, in accordance with 10 CFR 50.72(b)(3)(ii)(B).

ROOT CAUSE

The apparent cause for this event is inadequate review of control room circuitry for impact on PFSSD following a control room fire. The issues described in this LER were inherent in the original design of the plant. Since approval of the original safe shutdown strategy for a control room fire, a detailed circuit analysis for equipment required to achieve and maintain safe shutdown in the event of a control room fire was not completed. Instead, corrective actions to address specific identified issues regarding the control room fire safe shutdown strategy were addressed.

CORRECTIVE ACTIONS

A change was made to procedure OFN RP-017 that would de-energize the UPR and take the governor out of droop mode of operation. To address the issues with the UPR and a 125 VDC hot short, procedure OFN RP-017 was revised to have operators actuate the emergency start switch as a required action during the startup of the Train B DG.

A temporary modification was installed which bypassed the control room circuitry for the null meter and hand switch NEHS0012A.

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A PFSSD analysis of circuits/components in the control room that could affect OFN RP-017 components credited for PFSSD in the event of a control room fire will be performed and completed by 12/17/2010.

A modification to permanently address the PFSSD issue currently covered by temporary modification will be implemented by 7/28/2011.

SAFETY SIGNIFICANCE

This issue has 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 (E-1F9905), 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.

OPERATING EXPERIENCE/PREVIOUS EVENTS

LER 2005-005-00 reported a condition where a postulated fire could cause the loss of the centrifugal charging pump's capability to successfully inject borated water into the reactor. This condition was caused by the original Electrical Fire Hazards Analysis (EFHA) having non-validated assumptions and being insufficiently documented.

LER 2005-007-00 reported a condition where a postulated fire could cause the loss of field flashing for the Train B Diesel Generator. This condition was caused by the original EFHA completed for the Wolf Creek Generating Station not identifying that field flashing may not be available if a fire occurs in the control room.