



October 31, 2011

Russell A. Smith
Plant Manager

WO 11-0085

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

Subject: Docket No. 50-482: Licensee Event Report 2011-010-00, "Diesel Generator Declared Inoperable Due to Inadequate Adjustment of the Diesel Generator Governor"

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(A) through (D) regarding a diesel generator that was declared inoperable on September 1, 2011.

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,

Russell A. Smith

RAS/rlt

Enclosure

cc: E. E. Collins (NRC), w/e
J. R. Hall (NRC), w/e
G. B. Miller (NRC), w/e
Senior Resident Inspector (NRC), w/e

NRC FORM 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104		EXPIRES: 10/31/2013												
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 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 WOLF CREEK GENERATING STATION					2. DOCKET NUMBER 05000 482			3. PAGE 1 OF 5											
4. TITLE Diesel Generator Declared Inoperable Due to Inadequate Adjustment of the Diesel Generator Governor																			
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									
09	01	2011	2011	- 010	- 00	10	31	2011	FACILITY NAME	DOCKET NUMBER 05000									
9. OPERATING MODE Mode 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)																
10. POWER LEVEL 100%			<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)										
			<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 checked="" 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)(B)		<input checked="" 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 checked="" 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 Gautam Sen, Manager Regulatory Affairs								TELEPHONE NUMBER (Include Area Code) (620) 364-4175											
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						15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR									
<input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO						DATE		12	08	2011									
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) <p>On September 1, 2011, during the performance of procedure STS KJ-005A, "Manual/Auto Start, Sync and Loading of EDG NE01," the kilowatt (kW) output, current output and the fuel racks oscillated excessively at full load on the "A" Diesel Generator (DG). The peak-to-peak oscillations in kW output observed in the Control Room were 300 to 400 kW.</p> <p>The "A" DG was declared inoperable at 1443 Central Daylight Time (CDT) on September 1, 2011. The cause of the oscillations was due to an adjustment made to the "A" DG governor in May 2011. The governor was restored to its previous adjustment and the "A" DG was returned to service at 1032 CDT on September 4, 2011. The "B" DG and both offsite circuits were operable while the "A" DG was inoperable from 1443 CDT on September 1, 2011 through 1032 CDT on September 4, 2011. Further evaluation of this event is in progress and includes determining whether the "A" DG was capable of performing its specified safety function from May 21, 2011 through September 4, 2011.</p>																			

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PLANT CONDITIONS AT THE TIME OF THE EVENT

Mode 1
100 percent power

No inoperable structures, components or systems, other than the "A" Diesel Generator (DG) [EIS Codes: EK, DG], contributed to this event on September 1-4, 2011. The "B" DG [EIS Codes: EK, DG] was also inoperable for approximately three days between May 21, 2011 and September 4, 2011, as shown in the Basis for Reportability.

DESCRIPTION OF THE EVENT

On September 1, 2011, procedure STS KJ-005A, "Manual/Auto Start, Sync and Loading of EDG NE01," was conducted for the "A" train diesel generator (DG) to demonstrate operability. When the DG was fully loaded at approximately 5.9 megawatts (MW), oscillations occurred in kilowatt (kW) output, current output and fuel racks position. The peak-to-peak oscillations on kW output were 300 to 400 kW. The operating crew declared the "A" DG inoperable at 1443 Central Daylight Time (CDT) on September 1, 2011. Further evaluation of the issue determined that the oscillations were normal at low loads and would increase when load reached or exceeded 5.8 MW.

On August 2, 2011, procedure STS KJ-005A was revised to specify a control band of 5800 kW to 6201 kW. During the performance of STS KJ-005A on September 1, 2011, the excessive oscillations were of sufficient size that the control band criteria could not be met and resulted in declaring the DG inoperable.

In response to the oscillations, the "A" DG fuel racks were lubricated and exercised, the electronic governor droop settings and digital reference unit settings were adjusted, and the hydraulic governor actuator was replaced. These actions did not substantially improve the oscillations on the "A" DG. Diagnostic testing tools for the electronic governor did not identify anything unusual.

During Refueling Outage 18 in May 2011, Wolf Creek Nuclear Operating Corporation employees with assistance from the DG vendor adjusted the "A" DG governor [EIS Code: EK, 65] to reduce fuel rack movement at steady load. This adjustment was determined to be the cause of the oscillations observed on September 1, 2011. The rack movement being experienced prior to May 2011 did not cause oscillations in the generator output.

The "A" DG may have been inoperable from approximately 1300 CDT on May 21, 2011, when adjustments to the "A" DG governor were completed. Procedure STS KJ-001A, "ESFAS Testing," was successfully completed prior to entering Mode 4 on May 24, 2011. "ESFAS" means Engineered Safety Features Actuation System. The "A" DG successfully passed the monthly surveillance test four times between the May 2011 adjustment of the DG governor and the oscillation event on September 1, 2011.

In each of the four surveillances, the DG was brought to near full load. Review of the data from these surveillances showed that the oscillations occurred but were not identified as excessive. An evaluation is in progress to determine whether the "A" DG was capable of performing its specified safety function during the period of 1300 CDT on May 21, 2011 through 1032 CDT on September 4, 2011.

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DESCRIPTION OF THE EVENT (continued)

The "B" DG governor was also adjusted in May 2011 and no adverse or abnormal load oscillations occurred when the "B" DG was operated at and above full load on September 14, 2011. A review of previous operational data confirmed that the "B" DG was not affected by load oscillations as a result of the adjustments made to the governor in May 2011.

The DGs are Colt-Pielstick / Fairbanks-Morse model 14PC2.5 engines. DGs "A" and "B" are dedicated to Engineered Safety Feature (ESF) buses NB01 and NB02 [EIS Codes: EB, BU], respectively. The DGs start automatically on a safety injection signal or on an ESF bus undervoltage signal. In the event of a loss of preferred power, the ESF electrical loads are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident, such as a loss of coolant accident.

BASIS FOR REPORTABILITY

The "A" DG may have been inoperable from approximately 1300 CDT on May 21, 2011 to 1032 CDT on September 4, 2011 because the DG governor was inadequately adjusted. An evaluation is in progress to determine whether the "A" DG was capable of performing its specified safety function during the period of 1300 CDT on May 21, 2011 through 1032 CDT on September 4, 2011.

During this time period, the "B" DG was also inoperable as shown below:

Out of Service	Returned to Service	Reason for Removal from Service
06/15/2011, 1146 CDT	06/16/2011, 1210 CDT	Maintenance on ventilation damper in Mode 5
08/09/2011, 0400 CDT	08/10/2011, 1155 CDT	Planned maintenance

The guidance in NUREG-1022, Rev. 2, "Event Reporting Guidelines," indicates an event or condition is reportable per 10 CFR 50.73(a)(2)(v) if either offsite power or onsite emergency power is unavailable to the plant, regardless of whether the other system is available. This condition is, therefore, reported in accordance with 10 CFR 50.73(a)(2)(v)(A) through (D) as an event or condition that could have prevented fulfillment of a safety function.

Technical Specification (TS) 3.8.1, "AC Sources - Operating," requires two DGs capable of supplying the onsite Class 1E power distribution subsystem(s) [EIS Codes: EB, ED, and EF] be operable in Modes 1, 2, 3 and 4. TS 3.8.2, "AC Sources - Shutdown," requires one DG to be operable in Modes 5 and 6. With the "A" DG considered inoperable from May 21, 2011 to September 4, 2011 and the "B" DG being inoperable as shown in the table above, multiple TS Conditions / Required Actions were not completed within the specified Completion Times. Additionally, Limiting Condition of Operation (LCO) 3.0.4 was not met when transitioning from Mode 5 to Mode 1. This event is considered a condition prohibited by TS, which is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

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ROOT CAUSE

The immediate cause of this event was an adjustment to the "A" DG governor during Refueling Outage 18 in May 2011 to reduce fuel rack movement at full load. Further evaluation of this event is in progress and includes determining whether the "A" DG was capable of performing its specified safety function from May 21, 2011 through September 4, 2011.

CORRECTIVE ACTIONS

The "A" DG Governor was restored to the pre-May 2011 settings. Procedures MPE NE-003, "Governor Adjustments for Emergency Diesel Generator NE01," TMP 11-014, "EDG NE01 Overload Test," and STS KJ-015A, "Manual/Auto Fast Start Sync and Loading of EDG NE01," were completed for restoring the "A" DG. The "A" DG was returned to service on September 4, 2011. Further evaluation of this event is in progress and includes determining whether the "A" DG was capable of performing its specified safety function during the period of 1300 CDT on May 21, 2011 through 1032 CDT on September 4, 2011.

SAFETY SIGNIFICANCE

The "A" DG may have been inoperable from approximately 1300 CDT on May 21, 2011 to 1032 CDT on September 4, 2011 because the governor was inadequately adjusted. During this time period, the "B" DG was also inoperable as shown previously in the Basis for Reportability.

When the "A" and "B" DGs are inoperable, there are no remaining stand-by alternating current (AC) sources. Thus, with an assumed loss of offsite electrical power, sufficient stand-by AC sources are not available to power the minimum required ESF functions. There were six instances in which one out of two offsite circuits was inoperable for a short period of time during scheduled surveillance tests performed from May 21, 2011 through September 4, 2011. However, the required offsite circuits were powering their respective ESF busses during these periods.

Procedure STS KJ-001A was successfully completed prior to Wolf Creek Generating Station entering Mode 4 on May 24, 2011. The "A" DG successfully passed the monthly run surveillance four times between the May 2011 adjustment of the DG governor and the oscillation event on September 1, 2011. In each of the four monthly surveillances, the "A" DG was brought to near full load.

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OPERATING EXPERIENCE / PREVIOUS SIMILAR OCCURRENCES

LER 2000-004-00: On May 11, 2000, during the performance of STS KJ-005A, "Manual/Auto Start, Synchronization, & Loading of Emergency D/G NE01," the "A" DG experienced erratic load swings while paralleled to the grid at full power. This event was reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications because Surveillance Requirement (SR) 3.8.1.3 was not met. The root cause was inadequate procedural guidance concerning test acceptance standards. A contributing cause was a degraded governor which caused difficulty in controlling the DG during testing.

LER 2009-005-00: At 1208 CDT on October 22, 2009, the "A" DG was taken out of service for troubleshooting of abnormal alarm indications and the "B" DG was out of service for maintenance during a refueling outage. This event was reported in accordance with 10 CFR 50.73(a)(2)(v)(B) through (D) as a loss of safety function. A Notification of Unusual Event was declared at 1739 CDT on October 22, 2009 and terminated at 0740 CDT on October 23, 2009. Power to the safety-related busses was supplied by offsite power and all fuel assemblies were in the Spent Fuel Pool.

LER 2011-002-00: On February 22, 2011, the "A" DG was taken out of service when a walk down identified that a control pin on the fuel rack for the "A" DG was not completely inserted and not secured by a washer and cotter pin in accordance with the design. This event was reported in accordance with 10 CFR 50.73(a)(2)(v)(A) through (D) as a loss of safety function. Power to the safety-related busses was supplied by offsite power and the "B" DG.

Corrective actions associated with these previous events addressed different immediate causes and would not have prevented the current reportable event.