

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Stephen E. Hedges  
Vice President Operations and Plant Manager

September 6, 2007

WO 07-0017

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

Subject: Docket No. 50-482: Licensee Event Report 2007-001-00, Emergency Diesel Generator Out of Service Longer than Technical Specification Allowed Outage Time

Gentlemen:

As a result of repairs being performed on the Emergency Diesel Generator 'A', Wolf Creek Nuclear Operating Corporation (WCNOC) requested and was granted a Notice of Enforcement Discretion to exceed the Allowed Outage Time of 72 hours. The enclosed Licensee Event Report (LER) 2007-001-00 is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) to document this condition for any operation or condition which was prohibited by Technical Specifications.

Commitments made by WCNOC 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. Kevin Moles at (620) 364-4126.

Sincerely,



Stephen E. Hedges

SEH/rit

Attachment  
Enclosure

cc: J. N. Donohew (NRC), w/a, w/e  
V. G. Gaddy (NRC), w/a, w/e  
B. S. Mallett (NRC), w/a, w/e  
Senior Resident Inspector (NRC), w/a, w/e

IE22

### LIST OF COMMITMENTS

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation in this document. Any other statements in this letter are provided for information purposes and are not considered regulatory commitments. Please direct questions regarding these commitments to Mr. Kevin Moles, Manager Regulatory Affairs at Wolf Creek Generating Station, (620) 364-4126.

<b>REGULATORY COMMITMENT</b>	<b>DUE DATE</b>
<b>Core work instructions will be generated for the intercooler and jacket water pumps to incorporate the deficiencies identified and the lessons learned in this event.</b>	2/15/2008
<b>Maintenance training will be developed and presented that addresses the less than adequate workmanship practices.</b>	12/26/2008

# 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: 50 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.

<b>1. FACILITY NAME</b> WOLF CREEK GENERATING STATION	<b>2. DOCKET NUMBER</b> 05000 482	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
Emergency Diesel Generator Out of Service Longer than Technical Specification Allowed Outage Time

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
07	08	2007	2007	- 001 -	00	09	06	2007	FACILITY NAME	DOCKET NUMBER
										05000
										05000

<b>9. OPERATING MODE</b> 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> (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)						
<b>10. POWER LEVEL</b> 100	<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 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 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 Kevin J. Moles, Manager Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) (620) 364-4126
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	LB	SEAL	C470	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b> MONTH: _____ DAY: _____ YEAR: _____
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**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 5, 2007, the Emergency Diesel Generator 'A' (EDG 'A') was declared inoperable to perform a scheduled surveillance. During the surveillance test, increased leakage was detected on the engine-driven intercooler pump shaft seal in excess of the leakage limit of 9.1 ml/min.

During repairs to the intercooler pump shaft seal, the pump impeller, wear rings and shaft bearing were replaced. Post maintenance checks discovered a leak on the jacket water pump seal and that the gear box that drives both the intercooler and engine-driven jacket water pumps was abnormally hot. After the pump was disassembled, it was found that the sleeve bearing and shaft were damaged and needed to be replaced. Maintenance to repair the sleeve bearings and the shaft and required post-maintenance testing would result in exceeding the 72 hour allowed outage time (AOT) of Technical Specification 3.8.1, Action B.4.1.

On July 8, 2007, Wolf Creek Nuclear Operating Corporation requested a Notice of Enforcement Discretion (NOED) to extend the AOT for EDG 'A' an additional 48 hours to allow completion of the necessary repair and testing to restore EDG 'A' operability. The NRC granted the NOED on July 8, 2007. EDG 'A' was repaired, tested, and declared operable on July 9, 2007.

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		2007	-- 001	-- 00	

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PLANT CONDITIONS PRIOR TO EVENT:

MODE – 1  
Power – 100

BACKGROUND:

The diesel engine cooling water system [EIS Code: LB] is a closed loop system that cools the diesel generator engine and consists of a jacket cooling water system and an intercooler cooling system. The intercooler cooling system consists of an engine-driven intercooler pump, intercooler heat exchanger, piping, valves, controls and instrumentation. The intercooler pump circulates water through the intercooler heat exchanger and the engine-mounted intercoolers. The jacket cooling water system consists of an engine-driven pump, a jacket water heat exchanger, an electric motor-driven keep warm pump, an electric keep warm heater, piping, valves, controls, and instrumentation. The engine-driven pump circulates water through the cylinder jackets and the jacket water heat exchanger, where extracted heat is transferred to the essential service water system [EIS Code: BI]. When in standby status, the electric motor-driven pump circulates water through the electric heater and the engine cylinder jackets to keep the engine warm.

EVENT DESCRIPTION:

On July 5, 2007, at 1406 CDT, Emergency Diesel Generator 'A' (EDG 'A') [EIS Code: DG] was declared inoperable to perform a scheduled surveillance. During the surveillance test, increased leakage was detected on the diesel generator engine-driven intercooler pump shaft seal. At 1420 CDT, it was determined that the diesel generator engine-driven intercooler pump had a seal leak of approximately 20 ml/min and the jacket/intercooler water leakage limit was 9.1 ml/min. During repairs to the intercooler pump shaft seal, the pump impeller, wear rings and shaft bearing were replaced. Post maintenance checks discovered a leak on the jacket water pump seal and that the gear box that drives both the intercooler and engine-driven jacket water pumps was abnormally hot. After the pump was disassembled, it was found that the sleeve bearing and shaft were damaged and needed to be replaced. Maintenance to repair the sleeve bearings and the shaft and required post-maintenance testing would result in exceeding the 72 hour allowed outage time (AOT) of Technical Specification (TS) 3.8.1, Action B.4.1.

Wolf Creek Nuclear Operating Corporation (WCNOC) reviewed the work activities on the EDG 'A' performed in June 2007, which involved replacing the shaft oil seals and pump mechanical seals along with performing a post maintenance engine run that revealed no leakage. It appears that deficient mechanical seal installation practices in June contributed to leakage experienced on July 5, 2007. Emergency Diesel Generator 'B' (EDG 'B') had the shaft oil seals and pump mechanical seals replaced during the Fall 2006 outage. EDG 'B' was also overhauled during the Fall 2006 outage, which required over fifty hours of post maintenance testing run time. EDG 'B' also successfully passed rigorous ESFAS test runs during the outage and all of its TS required monthly surveillance runs since the outage, and has not exhibited any leakage from the jacket water or intercooler pumps. As such, no common cause failure was introduced in EDG 'B'."

On July 8, 2007, Wolf Creek requested a Notice of Enforcement Discretion (NOED) to extend the AOT for EDG 'A' an additional 48 hours to allow completion of the necessary repair and testing to restore EDG 'A' operability. The NRC

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gave verbal approval of the NOED at 1130 CDT on July 8, 2007. EDG 'A' was repaired, tested, and declared operable at 2006 CDT on July 9, 2007.

BASIS FOR REPORTABILITY:

WCNOC requested and received a NOED from the NRC for enforcement discretion to extend the AOT for Emergency Diesel Generator 'A' from 72 hours to 120 hours. The Emergency Diesel Generator 'A' was out of service for longer than allowed by the AOT of the Wolf Creek Generating Station TS 3.8.1, Required Action B.4.1. The event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) for any operation or condition which was prohibited by the plant's TS.

ROOT CAUSE:

The Intercooler Pump mechanical seal failure was due to the less than adequate installation of the stationary part of the mechanical seal. The work order had instructions for properly determining the amount of shims to install and for installing the stationary portion of the seal. This less than adequate installation of the stationary seal was a workmanship issue. Also, changing the intercooler pump bearing and not changing the jacket water pump bearing caused the angularity of the shaft to be out of tolerance. The work order instructions did not contain instructions for properly checking the shaft and bearing tolerances.

A contributing cause was the misalignment of the intercooler water pump following replacement of the oil seal and mechanical seal associated with the pump. The work order had instructions for verifying the pump casing was centered and concentric to the shaft and aligned with the pump discharge flange. These instructions did not address the actual tightening of the discharge flange or the verification the pump casing was still centered after tightening of the discharge flange. These less than adequate work order instructions caused alignment issues for the Intercooler Pump installation.

CORRECTIVE ACTIONS:

Vendor instructions were incorporated into the Wolf Creek Generating Station document control system. The instructions contain maintenance information useful in the assembly of the EDG engine-driven pumps, including the pump shaft, drive gear, and support plate.

Core work instructions will be generated for the intercooler and jacket water pumps to incorporate the deficiencies identified and the lessons learned in this event. These instructions will be completed by February 15, 2008. Additionally, maintenance training will be developed and presented that addresses the less than adequate workmanship practices. This training will be presented by December 26, 2008.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

**SAFETY SIGNIFICANCE:**

The WCNOC final quantitative risk analysis indicated that the incremental conditional core damage probability (ICCDP) for the 48 hour extension was 1.15E-06, and the incremental conditional large early release probability (ICLERP) for the 48 hour extension is 2.25E-09. The value for ICLERP is less than the guidance threshold in Inspection Manual Part 9900 Technical Guidance.

Although the value for ICCDP exceeded the guidance threshold of less than or equal to 5.0E-07, the calculated ICCDP did not consider the implied risk of shutting down the plant with only one available diesel generator, the availability of the Sharpe Station to mitigate a station blackout event, and a favorable weather forecast for the duration of the requested time period.

To mitigate the risk impact, WCNOC committed to implement a series of compensatory actions for the duration of the enforcement discretion period. Although the risk analysis indicated that the ICCDP and ICLERP would increase slightly as a result of the enforcement discretion, the compensatory measures committed to by the licensee would substantially reduce this risk increase. The compensatory measures were sufficient to result in no net increase in radiological risk.

**OPERATING EXPERIENCE/PREVIOUS EVENTS:**

None.