



Britt T. McKinney  
Vice President Plant Operations and Plant Manager

DEC 6 2000

WO 00-0044

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Subject: Docket No. 50-482: Licensee Event Report 2000-004-00

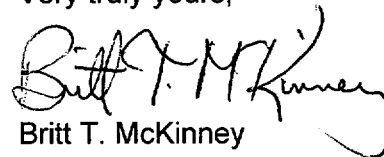
Gentlemen:

The enclosed Licensee Event Report (LER) 2000-004-00 is being submitted, pursuant to 10 CFR 50.73(a)(2)(i), regarding two improperly performed surveillances for Technical Specification Surveillance Requirement 3.8.1.3 to verify the "A" Diesel Generator's capability of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads and aligned to provide standby power to the associated emergency busses. This represents a failure to meet plant Technical Specifications.

The attachment to this letter identifies the action committed to by Wolf Creek Nuclear Operating Corporation in the enclosed LER.

If you should have any questions regarding this submittal, please contact me at (316) 364-4112, or Mr. Tony Harris at (316) 364-4038.

Very truly yours,



Britt T. McKinney

BTM/rlr

Enclosure  
Attachment

cc: J. N. Donohew (NRC), w/e, w/a  
W. D. Johnson (NRC), w/e, w/a  
E. W. Merschoff (NRC), w/e, w/a  
Senior Resident Inspector (NRC), w/e, w/a

IE22

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES  
06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1)  
WOLF CREEK GENERATING STATION

DOCKET NUMBER (2)  
05000482

PAGE (3)  
1 OF 5

TITLE (4)  
Failure to Satisfactorily Perform Technical Specification Surveillance Requirement 3.8.1.3

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	07	2000	2000	004	00	12	6	2000	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		MODE 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
			20.402(b)		20.405(c)				50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		100%	20.405(a)(1)(i)		50.36(c)(1)				50.73(a)(2)(v)	73.71(c)
			20.405(a)(1)(ii)		50.36(c)(2)				50.73(a)(2)(vii)	OTHER
			20.405(a)(1)(iii)		X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)	
			20.405(a)(1)(iv)		50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)	
			20.405(a)(1)(v)		50.73(a)(2)(iii)				50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME  
Karl A. (Tony) Harris  
Manager Regulatory Affairs

TELEPHONE NUMBER (Include Area Code)  
(316) 364-4038

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)

YES	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT:

Technical Specification Surveillance Requirement (SR) 3.8.1.3 states, "Verify each [Diesel Generator] DG is synchronized and loaded and operates for  $\geq 60$  minutes at a load of  $\geq 5580$  kW and  $\leq 6201$  kW." This SR is modified by a Note which states: "Momentary transients outside the load range do not invalidate this test." The Frequency of this SR is every 31 days. During a recent review of data from surveillance tests between September, 1999, and September, 2000, Wolf Creek Nuclear Operating Corporation (WCNOC) personnel noted that on May 11, 2000, and on September 14, 2000, the load on the "A" DG was not within the acceptable kW band specified for a consecutive period of 60 minutes. Although several excursions occurred, the longest single time the DG load was outside the band was approximately 15 minutes during the surveillance on May 11, 2000. All load transients outside the specified full load band were within the load ratings of the DG for the duration of those transients. Although all performance requirement of the surveillance were not met (i.e., not having more than momentary transients) the intent of the surveillance was met, in that the surveillance demonstrated the ability of the DG to perform its safety function. 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. The procedures will be revised to clarify test performance acceptance standards. The governor was replaced during Refuel XI (October, 2000).

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
			YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station		05000482	2000	004	00	2 OF 5

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

**Plant Conditions Prior to the Event:**

MODE -- 1

Power -- 100 percent

Temperature -- 586.2 degrees Fahrenheit

Pressure -- 2238.2 pounds per square inch gauge

**Basis for Reportability:**

10 CFR 50.73 (a)(2)(i)(B) states that licensees shall report "any operation or condition prohibited by the plant's Technical Specifications." Surveillance Requirement (SR) 3.8.1.3 states to "Verify each DG is synchronized and loaded and operates for  $\geq 60$  minutes at a load  $\geq 5580$  kW and  $\leq 6201$  kW." This SR is modified by a Note which states: "Momentary transients outside the load range do not invalidate this test." During two surveillance tests, on May 11, 2000, and September 14, 2000, the "A" DG exhibited load swings of sufficient duration such that they could not reasonably be called "momentary" and the requirement of greater than 60 minutes within the load band was not met. As discussed in NUREG-1022, Revision 1, missed surveillance tests are reportable when the surveillance frequency, plus allowed surveillance frequency extension, plus the Required Action Completion Time, are exceeded. Per NUREG 1022, Revision 1, "The event is reportable even though the surveillance is subsequently satisfactorily performed." In these two cases, surveillance tests on both May 11, 2000, and September 14, 2000, were unsatisfactory, which represents a condition prohibited by the plant's Technical Specifications. In each case, SR 3.8.1.3 was satisfactorily performed within the acceptance standards at the next surveillance test interval.

In addition, in both cases, since the "A" DG did not fully meet the performance requirements of SR 3.8.1.3, then it should have been declared inoperable. Technical Specification LCO 3.8.1, Condition B, requires, in part, that with one DG inoperable, it is to be restored to OPERABLE status within 72 hours. In both cases, the "A" DG was not restored to OPERABLE status within 72 hours, thus requiring entry into Condition G, which requires the plant to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This Condition was also not met, placing the plant into a condition not covered by Technical Specifications, which requires entry into LCO 3.0.3. This entry was not made in either case, which is also reportable under 10 CFR 50.73 (a)(2)(i) (B).

**Event Description:**

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. After observing the behavior of the DG, WCNOE engineering personnel believed the problem was with the droop setting of the electronic governor control. The "A" DG ran loaded for more than one hour, and personnel believed that the intent of the surveillance requirement had been met. The load swings were interpreted as being "momentary" in nature. The surveillance test was determined satisfactorily completed and the "A" DG was considered to be OPERABLE.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station		05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 5
			2000	004	00	

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

Changes to the settings for governor droop were made on June 15, 2000, and STS KJ-015A, "Manual/Auto Fast Start Synchronization and Loading of EDG," was performed satisfactorily. After the governor was adjusted, the "A" DG load variations were within acceptable levels. Procedures STS KJ-005A and STS KJ-015A have the same test criteria relative to SR 3.8.1.3.

However, on subsequent monthly surveillance tests, the load swings became more pronounced. An historical data review showed that during the surveillance test conducted on September 14, 2000, the load swings were again of sufficient duration to not meet the acceptance criteria of greater than 60 minutes within the operating band. The September 14, 2000, surveillance had also been accepted as satisfactory. All load transients outside the specified load band were within the load ratings of the DG for the duration of those transients.

On October 3, 2000, during Refuel XI, STS KJ-001A, "Integrated Diesel Generator and Safeguards Actuation Test - Train A," was performed. During the surveillance, a deficiency in the transient generator frequency response was identified. The transient frequency deficiency is not a Technical Specification required test, and thus, does not have Technical Specification acceptance criteria. It was included in this test as an indicator of governor and engine performance.

Further troubleshooting during Refuel XI determined that the electrical transducer setpoint voltage in the governor electro-mechanical actuator (governor actuator) was drifting. This caused the governor's speed control setting to drift, which was determined to be the root cause for the erratic load swings that had occurred when the DG was paralleled to the grid for surveillance testing.

After the identification of the speed drift problem with the governor actuator, WCNOG personnel conducted a review of past surveillances. High resolution graphs were constructed showing the generator load during surveillance tests from September, 1999 through September, 2000. These graphs revealed that the May 11, 2000, and September 14, 2000, surveillance tests did not meet the literal requirement of maintaining "A" DG load within the specified load band for greater than 60 minutes with no more than "momentary" transients.

SR 3.8.1.3 documentation and test data on "B" DG was reviewed, and was determined to be satisfactory.

Since the "A" DG did not fully meet the performance requirements of SR 3.8.1.3, it should have been declared inoperable. Technical Specification LCO 3.8.1, Condition B, requires, in part, that with one DG inoperable, it is to be restored to OPERABLE status within 72 hours. In both cases, the "A" DG was not restored to OPERABLE status within 72 hours, thus requiring entry into Condition G, which requires the plant to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This Condition was also not met, placing the plant into a condition not covered by Technical Specifications, which requires entry into LCO 3.0.3. This entry was not made in either case, which is reportable under 10 CFR 50.73 (a)(2)(i)(B).

NRC FORM 366A (6-98)		U.S. NUCLEAR REGULATORY COMMISSION		<div style="text-align: center;"> <b>LICENSEE EVENT REPORT (LER)</b>  <b>TEXT CONTINUATION</b> </div>							
FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)							
Wolf Creek Generating Station		05000482		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px; text-align: center;">YEAR</td> <td style="padding: 5px; text-align: center;">SEQUENTIAL NUMBER</td> <td style="padding: 5px; text-align: center;">REVISION NUMBER</td> </tr> <tr> <td style="padding: 5px; text-align: center;">2000</td> <td style="padding: 5px; text-align: center;">004</td> <td style="padding: 5px; text-align: center;">00</td> </tr> </table>		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2000	004	00
YEAR	SEQUENTIAL NUMBER	REVISION NUMBER									
2000	004	00									
				4 OF 5							

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

Additionally, since the "A" DG was technically inoperable in May and September because of the improperly performed surveillances, there were times when both DGs were inoperable. WCNOC personnel should have entered Technical Specification 3.8.1, Condition E, which states to return at least one diesel to OPERABLE status within 2 hours. On May 25 at 13:01 the "B" DG was made inoperable to perform the air roll per procedure. The "B" DG was returned to OPERABLE status at 13:59. Again on September 26 at 13:00, the "B" DG was made inoperable to perform the air roll on the "B" DG per procedure. The "B" DG was returned to OPERABLE status at 14:10. On both occasions, the "B" DG was restored to OPERABLE status before exceeding the two hour Completion Time of Technical Specification 3.8.1, Condition E.

**Root Cause:**

Performance Improvement Request 2000-3385 was initiated November 7, 2000, upon discovery of the improperly performed surveillances in May and September, 2000, to investigate the cause and determine corrective actions.

The root cause for the failures to properly perform SR 3.8.1.3 has been identified as inadequate guidance in the surveillance procedures which implement SR 3.8.1.3 concerning test acceptance standards and operator actions to control DG load drifts outside the load limits.

A contributing factor was that the "A" DG governor actuator had a fault which caused the speed control set point of the governor to drift. The speed control setpoint drift caused erratic load swings during surveillance testing.

**Corrective Actions:**

Applicable surveillance procedures will be revised by March 7, 2001, to clarify the actions of the operator in response to DG load drift and to clarify the SR acceptance criteria. Procedures that are required to be performed prior to March 7, 2001, will be revised prior to performance.

The faulty DG mechanical governor was replaced in Refuel XI (October, 2000).

**Safety Significance:**

The safety function of the diesel generators is to supply emergency 4160 volts AC power to the respective 4160 volts AC bus, within 12 seconds of a demand, for up to seven days, in the event of a loss of off-site power to that bus.

The onsite standby power source for each 4.16 kV Engineered Safety Feature (ESF) bus is a dedicated diesel generator. Diesel generators "A" and "B" are dedicated to ESF buses NB01 and NB02, respectively. The diesel generator starts automatically on a safety injection (SI) signal or on an ESF bus undervoltage signal. A degraded voltage signal produces an undervoltage condition by opening the normal and alternate feeder breakers. After the diesel generator has started, it will automatically tie to its respective bus after off-site power is tripped as a consequence of ESF bus undervoltage or degraded voltage, independent of or coincident with an SI signal. The

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station		05000482		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 5
				2000	004	00	

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

diesel generators will also start and operate in the standby mode without tying to the ESF bus on an SI signal alone. In the event of a loss of preferred power, the ESF electrical loads are automatically connected to the diesel generators by the load sequencer in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a loss of coolant accident (LOCA). Ratings for train "A" and train "B" diesel generators satisfy the requirements of Regulatory Guide 1.9.

The Technical Specification Bases for Surveillance Requirement (SR) 3.8.1.3 states, in part, "This Surveillance verifies that the diesel generators are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads and aligned to provide standby power to the associated emergency buses. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time the DG is connected to the offsite source." It further states, "The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY." This SR is also modified by a note which states that momentary transients, because of changing bus loads, do not invalidate this test.

During the surveillance tests on May 11 and September 14, 2000, the "A" DG demonstrated that it could supply 4160 VAC to the NB01 bus. The "A" DG ran continuously for more than one hour with stable temperatures. The DG demonstrated that it could carry greater than maximum expected accident loads by carrying the minimum load of 5580 kW as specified in the surveillance. Transients outside the specified band of  $\geq 5580$  and  $\leq 6201$  kW occurred due to the governor operation being degraded, which caused less than 60 minutes of operation within the specified band. However, the safety function of being able to supply emergency power to the bus was demonstrated. Testing in the outage before the governor was replaced demonstrated the "A" DG could meet the safety function requirements, by sequencing loads on and operating with stable frequency in the isochronous mode. The governor operation was not optimum, but the "A" DG could perform all of its safety functions. Because the "A" DG could perform its safety function, the safety significance of this issue was minimal.

**Previous Occurrences:**

No previous reportable events with similar root cause have occurred for the Diesel Generators.

**LIST OF COMMITMENTS**

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation (WCNOC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Tony Harris, Manager Regulatory Affairs at Wolf Creek Generating Station, (316) 364-4038.

COMMITMENT	Due Date/Event
Applicable surveillance procedures will be revised to clarify the actions of the operator in response to DG load drift and to clarify the SR acceptance criteria. Procedures that are required to be performed prior to March 7, 2001, will be revised prior to performance.	March 7, 2001