WOLF CREEK
NUCLEAR OPERATING CORPORATION

Neil S. "Buzz" Carns
Chairman, President and
Chief Executive Officer

August 22, 1995

WM 95-0124

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-1 37
Washington, D. C. 20555

Subject: Docket No. 50-482: Special Report 95-002

Gentlemen:

The attached Special Report is being submitted in accordance with Wolf Creek Generating Station Technical Specification 4.8.1.1.3 concerning a valid failure of Emergency Diesel Generator "B" and an invalid failure of Emergency Diesel Generator "B."

If you should have any questions regarding this response, please contact me at (316) 364-8831, extension 4000, or Mr. William M. Lindsay at extension 8760.

Very truly yours,

Neil S. Carns

Neil S. Carns

NSC/jad

Attachment

cc: L. J. Callan (NRC), w/a
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IE22

Special Report 95-002
(Part 1)

Valid Failure of Emergency Diesel Generator "B"

This report describes a valid failure of Emergency Diesel Generator (EDG) "B" which occurred on July 27, 1995. This report is being submitted in accordance with Wolf Creek Generating Station (WCGS) Technical Specification 4.8.1.1.3.

Background Information:

On June 28, 1995, Wolf Creek Nuclear Operating Corporation (WCNOC) issued Special Report 95-001, by letter ET 95-0064. This letter documented an invalid failure of EDG "B." Corrective actions for this event included replacement of the EDG "B" Governor.

At the time of this event the "A" EDG was administratively declared inoperable to maximize personnel safety during the replacement of its lube oil keepwarm pump. WCGS had conservatively entered Technical Specification Action Statement 3.8.1.1(a).

Technical Specification Action Statement 3.8.1.1(a) defines the actions WCGS must implement when one EDG is inoperable.

Technical Specification Action Statement 3.8.1.1(b) defines the actions WCGS must implement when two EDGs are inoperable.

Description of Events:

On July 27, 1995, at approximately 2121 hours CDT, WCGS performed Surveillance Test STS KJ-005B, Revision 22, "Manual/ Auto Start, Synchronization & Loading Of Emergency D/G NE02." This test was performed to demonstrate operability of Emergency Diesel Generator "B," in accordance with the testing requirements specified in the Wolf Creek Generating Station Technical Specifications. This test implements a fast start and load of the EDG "B".

During the performance of this test, the unit experienced an initial frequency peak of about 64 cycles before stabilizing at 60 cycles. Upon completion of the test, the EDG "B" was shutdown in accordance with the guidance contained in STS KJ-005B. During the EDG "B" coast-down, the unit tripped on mechanical overspeed. WCGS declared the unit "Administratively" inoperable at 2132 hours CDT on July 27, 1995, entered WCGS Technical Specification Action Statement 3.8.1.1(b), and began an investigation to determine the cause of the EDG's trip. Both EDGs remained simultaneously inoperable for approximately 4.8 hours. WCGS declared an unusual event at 2211 hours CDT, on July 27, 1995, and notified the NRC at 2308 hours CDT, on July 27, 1995.

At approximately 0200 hours CDT, on July 28, 1995, WCGS started the "A" EDG to warm the unit and thus restore the lube oil to the required temperature band. Subsequently WCGS declared the "A" EDG operable, on July 28, 1995, at 0218 hours CDT, and WCGS Technical Specification Action Statement 3.8.1.1(b) was exited and Technical Specification Action Statement 3.8.1.1(a), was entered due to the inoperability of the EDG "B".

This event occurred while the EDG "B" was in the standby mode. The EDG "B" was administratively inoperable for approximately 70 hours, of which it was available for use and would have functioned correctly in an emergency for all but 20 of the 70 hours. During the 20 hour time period the unit was tagged out to facilitate replacement of the mechanical overspeed trip mechanism.

Root Cause and Corrective Actions

Root Cause:

WCGS believes that when the EDG "B" frequency peaked at approximately 64 cycles, during startup of the EDG "B", the mechanical overspeed plunger partially extended and repositioned the overspeed trip lever. The movement of the overspeed trip level was not enough to result in an immediate trip of the EDG "B". However it is believed that, during the coast down process, the overspeed trip lever vibrated into the full trip position resulting in a mechanical trip signal.

Immediate Corrective Action:

The unit was tested in an effort to determine the exact cause of the trip. This troubleshooting determined that the most likely cause of the mechanical overspeed trip was the overspeed trip lever, which had been repositioned during the EDG "B" startup, and vibrated into the "Tripped" position.

WCGS performed an evaluation and determined that this failure could have adversely affected the function of the EDG "B" when in the isochronous (emergency) mode.

To prevent recurrence of this action, WCGS adjusted the governor to reduce the maximum frequency experienced by the EDG "B" during startup to 62 cycles. WCGS has determined that this frequency is sufficiently low enough to prevent the overspeed trip switch from being repositioned during the initial startup of the EDG "B", and the subsequent vibration of the overspeed trip switch into the "Tripped" positioned.

Future Corrective Action:

The above discussed action has been determined to be appropriate to prevent recurrence of this problem.

Failure Classification:

In the event of an emergency, EDG "B" would have started and supplied power to its emergency bus as required. The repositioned overspeed trip switch could have prevented the EDG "B" from assuming the necessary emergency house loads. Therefore, this failure is classified as an valid failure in accordance with Position C.2.e(2), Regulatory Guide 1.108, Revision 1.

Special Report 95-002
(Part 2)

Invalid Failure of Emergency Diesel Generator "B"

This report describes an invalid failure of Emergency Diesel Generator (EDG) "B" which occurred on August 3, 1995. This report is being submitted in accordance with Wolf Creek Generating Station (WCGS) Technical Specification 4.8.1.1.3.

Description of Events:

On August 3, 1995, at approximately 0905 hours CDT, the "B" emergency diesel generator was started in accordance with Surveillance Test Procedure STS KJ-005B, Revision 22, "Manual/ Auto Start, Synchronization & Loading Of Emergency D/G NE02." This test was performed to meet monthly testing requirements specified in the WCGS Technical Specifications. The emergency diesel generator was successfully started and loaded. The "B" emergency diesel generator operated normally for approximately 27 minutes. At 0932 hours CDT, on August 3, 1995, a "Hi Lube Oil Sump Level" Alarm was received. The validity of the alarm was evaluated by Operations and System Engineering personnel. At 1000 hours CDT, the "B" emergency diesel generator was secured, the unit was declared inoperable, and WCGS entered Technical Specification Action Statement 3.8.1.1.b).

WCGS personnel immediately began an investigation into the cause of the high lube oil sump level. This investigation determined that lube oil, contained in the lube oil makeup tank, was leaking past the automatic lube oil makeup valve. This leakage resulted in the emergency diesel generator lube oil sump level increase and caused the lube oil sump high level alarm to actuate. WCGS manually isolated the automatic makeup valve and returned the emergency diesel generator lube oil sump to the correct level. The emergency diesel generator was retested and demonstrated operable at approximately 0439 hours, on August 4, 1995.

This event occurred during routine testing, as required by the WCGS Technical Specification 4.8.1.1.2(f). The EDG "B" was unavailable for approximately 28.5 hours. During this time period, the cause of the problem was determined and corrected.

Root Cause and Corrective Actions

Root Cause:

WCGS determined that oil, contained in the lube oil makeup tank, was leaking past the automatic lube oil makeup valve. This leakage resulted in the level in the emergency diesel generator lube oil sump increasing to the high level alarm setpoint.

Immediate Corrective Action:

WCGS secured the "B" emergency diesel generator and declared it inoperable until the lube oil sump level could be returned to the manufacturer's specified level.

WCGS manually isolated the automatic lube oil makeup valve and returned the emergency diesel generator lube oil sump to the correct level. The automatic lube oil makeup valve will remain isolated until repairs can be effected. This action was determined to be acceptable, based on the ability of the EDG "B" to operate continuously for a minimum of 10 days without the addition of oil, as discussed below.

Future Corrective Action:

The above discussed corrective actions are adequate to prevent recurrence of this problem. WCGS will repair the automatic lube oil makeup valve during a future emergency diesel generator outage. The oil contained in the lube oil storage tank is not necessary because the capacity of the engine lube oil sump provides a sufficient volume of oil, so that the engine can operate at the nameplate continuous rating for at least seven days without replenishing the oil in the sump. When operating at nameplate continuous rating, engine oil consumption is approximately 60 gallons per day. At full capacity, the engine oil sump contains 1200 gallons of oil. The engine sump is considered empty at 300 gallons. This provides 900 gallons of oil that can be consumed which represents between 14 and 15 days of continuous operation without replenishment. At the low sump level alarm point, there is approximately 963 gallons in the sump which provides 663 gallons of consumable oil or approximately 11 days continuous operation without replenishment. If continuous operation starts when the oil level was at the add oil level (approximately 948 gallons), there is 648 gallons of consumable oil which represents a 10 day supply.

Failure Classification:

In the event of an emergency, EDG "B" would have started and supplied power to its emergency bus as required. The high level in the sump and the subsequent isolation of the automatic makeup valve would not have prevented the emergency diesel generator from performing its designed function. Therefore, this failure is classified as an invalid failure in accordance with Position C.2.e(2), Regulatory Guide 1.108, Revision 1.