



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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INTRODUCTION

On October 25, 1988, at approximately 1600 CDT, as a follow-up to conditions identified during Integrated Leak Rate Testing (ILRT), preliminary investigations indicated that Containment Cooling Fan 'B' [BK-FAN] could not be relied upon to perform its intended design function under accident conditions due to a motor overcurrent condition. Containment Cooling Fan 'B' was declared inoperable. Subsequent evaluation has concluded that this condition has existed since the motor [BK-MO] was initially installed on July 25, 1987. Following the installation of this motor, the plant has operated in all modes. Technical Specification (T/S) 3.6.2.3, applicable for Mode 1, Power Operations, through Mode 4, Hot Shutdown, requires two independent groups of Containment Cooling Fans to be operable with two fan systems to each group. With one group inoperable and both Containment Spray Systems [BE] operable, T/S 3.6.2.3, action statement 'a', requires restoring the inoperable group of cooling fans to operable status within 7 days or being in at least Mode 3, Hot Standby, within the next 6 hours, and in Mode 5, Cold Shutdown, within the following 30 hours. In addition, T/S 3.0.4 prohibits entry into an operational mode or other specified condition unless the conditions for the Limiting Condition for Operation are met without reliance on the provisions contained in the action requirements. Therefore, this event is being reported pursuant 10CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's T/S.

DESCRIPTION OF EVENTS

On July 20, 1987, at approximately 1149 CDT, Containment Cooling Fan 'B' tripped. The plant was in Mode 1, with the Reactor [AB-RCT] at approximately 100 percent power. Containment Cooling Fan 'B' was declared inoperable and T/S 3.6.2.3, action statement 'a' was entered.

On July 20, 1987, at approximately 2303 CDT, the plant experienced a Reactor Trip as discussed in Licensee Event Report (LER) 87-030-00. The Reactor Trip was neither caused by nor affected by the inoperable Containment Cooling Fan. However, T/S 3.0.4 prohibited entry into Mode 2, Startup, with Containment Cooling Fan 'B' inoperable.

Subsequent inspection of Containment Cooling Fan 'B' revealed that one of the sixteen variable pitch fan blades had failed damaging several other fan blades. The damaged fan blades were replaced. The three remaining Containment Cooling Fans were inspected to verify that the fan blades were firmly fastened, at the correct pitch, and that there was no excessive motor vibration. This information indicated that the fan blade failure was an isolated event, not indicative of a generic design or manufacturing error that would result in the simultaneous failure of the other Containment Cooling Fans.

Examination of the fan motor identified that the motor shaft had excessive runout which indicated a possible bearing failure. This fan motor was replaced with a new assembly on July 25, 1987. Following motor installation, motor current amperage readings were measured and recorded.

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These readings were within the nameplate ratings for the motor. After Containment Cooling Fan 'B' was restored to operable status, the plant entered Mode 2 on July 26, 1987, at approximately 0515 CDT, and Mode 1 at approximately 0740 CDT.

On October 17, 1988, while pressurizing Containment [NH] for the ILRT, Containment Cooling Fan 'B' was taken off line due to current values in excess of the motor's nameplate rating. The fan was restarted when Containment was at a pressure of 50.4 psig, at which time Containment Cooling Fan 'B' drew 164 amperes in slow speed. The fan was again taken off line and a request for an engineering evaluation was initiated. The plant was in Mode 3 in preparation for the third refueling at the time of the ILRT.

On October 25, 1988, at approximately 1600 CDT, preliminary investigations by Engineering indicated that Containment Cooling Fan 'B' could not be relied upon to perform its intended design function under accident conditions. No-load testing was conducted to determine if the described condition was the result of fan or motor problems. The no-load test results were as follows:

Fast Speed (1200 rpm)	Slow Speed (600 rpm)
Current	Current
Phase A 64 amperes	Phase A 142 amperes
Phase B 65.2 amperes	Phase B 140 amperes
Phase C 65.9 amperes	Phase C 140 amperes

Based on the performance data supplied by the manufacturer with the original fan motors, the no-load motor current should be approximately 41 and 104 amperes for fast and slow speed, respectively.

CAUSE AND CORRECTIVE ACTIONS

As a result of a review of all data taken during the events of July, 1987, and a comparison with the data recorded during ILRT, it appears that the motor overcurrent condition has existed since the motor was initially installed on July 25, 1987, (i.e. the condition does not appear to be due to motor degradation).

The nameplate values given on the motor test report supplied by the vendor with the motor meet the design specifications for the motor. However, the values for the no-load and nameplate ratings on this motor test report appear to be inconsistent with each other. The no-load value of 129.6 amperes on the test report appears to be too high to meet the full-load nameplate rating of 147 amperes. In addition, the actual motor performance as measured during the ILRT and the subsequent no-load test appears to be inconsistent with the motor test report no-load and full-load values. The actual fan motor current values measured during these tests exceeded the design specified current values.

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Due to these inconsistencies, it is believed the motor could not be relied upon to perform its design function under accident conditions. The motor was replaced with a qualified motor. The subject motor will be sent off-site for disassembly and evaluation in an attempt to identify the cause of the motor overcurrent condition.

Review of the motor test reports and field tests for other fan motors in this application have not identified additional inconsistencies of this type. Therefore, it is believed that this is an isolated case. Evaluations of this event, in conjunction with the vendor, are ongoing. A supplement to this report detailing the results of these evaluations will be submitted on or before June 1, 1989.

EVALUATION

The design of the Containment Cooling System incorporates two redundant trains containing two Containment Cooling Fans per train. If one Containment Cooling Fan was out of service coincident with the worst case single failure of two additional Containment Cooling Fans due to diesel generator [EK-DG] failure or loss of Essential Service Water (ESW) [RI], only one Containment Cooling Fan would be available for Containment heat removal following a design basis accident. On this basis, the Containment pressure-temperature analysis was reanalyzed assuming only one Containment Cooling Fan in operation to determine the impact on Containment post accident temperature and pressure.

The effects of operating Wolf Creek Generating Station with three Containment Cooling Fans in both normal and post-accident conditions assuming worst case conditions, have been evaluated and found acceptable. Therefore, the operation of Wolf Creek Generating Station in Modes 1 and 2 with three operable Containment Cooling Fans did not adversely affect the health and safety of the public.

ADDITIONAL INFORMATION

The Containment Cooling Fan motor is manufactured by Reliance Electric Company, part number 6000287-43. The motor is a 460 volt two speed motor (rated at 150/75 horsepower) with two sets of windings with each set of windings having completely different characteristics.

From the time this motor was installed on July 25, 1987, until the time this event was discovered, the plant has operated in Mode 6, Refueling, through Mode 1, Power Operations, up to approximately 50 percent.

Although there have been previous occurrences of T/S violations, there have been no previous occurrences of Containment Cooling Fan inoperability due to motor overcurrent conditions.

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Bart D. Withers  
President and  
Chief Executive Officer

December 2, 1988

WM 88-0314

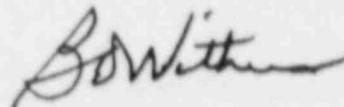
U. S. Nuclear Regulatory Commission  
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Washington, D. C. 20555

Subject: Docket No. 50-482: Licensee Event Report 88-021-01

Gentlemen:

The attached Licensee Event Report (LER) is submitted pursuant to 10 CFR 50.73(a)(2)(i) concerning a Technical Specification violation. This report is a revision to LER 88-021-00 which was submitted November 25, 1988 and corrects a typographical error in the supplemental report expected submission date.

Very truly yours,



Bart D. Withers  
President and  
Chief Executive Officer

BDW/jad

Attachment

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