WOLF CREEK
NUCLEAR OPERATING CORPORATION

John A. Bailey
Vice President
Nuclear Operations

April 30, 1990
NO 90-0136

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 89-020-01

Gentlemen:

The attached Licensee Event Report (LER) is being submitted as a supplement to LER 89-020-00 concerning the resolution of seismic analysis discrepancies affecting the containment cooling fan housings.

Very truly yours,

John A. Bailey
Vice President
Nuclear Operations

JAB/jra

Attachment

cc: R. D. Martin (NRC), w/a
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D. V. Pickett (NRC), w/a
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IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Wolf Creek Generating Station	0 5 0 0 0 4 8 2	1 OF 0 3

TITLE (4) Resolution Of Seismic Analysis Descrepancies Affecting Containment Cooling Fan System Housings

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
										0 5 0 0 0
1 1	1 7	8 9	8 9	0 2 0	0 1	0 4	3 0	9 0		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 0 0	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)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A) Supplemental Report
	20.405(a)(1)(iii)	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	TELEPHONE NUMBER
Merlin G. Williams - Manager Plant Support	AREA CODE 3 1 6 3 6 4 - 8 8 3 1

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On November 17, 1989, it was determined by a calculation that the as-built configuration of the housings for both trains of containment cooling fan heat exchangers were not seismically qualified to withstand a Safe Shutdown Earthquake. It was further determined that this situation placed the Wolf Creek Generating Station in a condition outside the design basis of the plant.

This calculation was performed in response to a notification by the Architect/Engineer (Bechtel Power Corporation) of generic errors/discrepancies in the original seismic qualification report. Upon completion of the calculation, both trains of containment cooling fans were declared inoperable. A plant modification package was developed to install additional seismic restraints. The installation of the restraints was completed on November 19, 1989 on the 'B' train and on November 20, 1989, on the 'A' train, thereby restoring both trains of containment cooling fans to operable status.

This supplemental report describes a detailed evaluation which concluded that the November, 1989, calculation was overly conservative and the configuration of the housings has always been in conformance with seismic design requirements.

INTRODUCTION

On November 17, 1989, it was determined that the as-built configuration of the housings for both trains of containment cooling fan heat exchangers [BK-HX] were not seismically qualified to withstand a Safe Shutdown Earthquake. It was further determined that this situation placed the Wolf Creek Generating Station (WCGS) in a condition outside the design basis of the plant. Therefore, Revision 0 of this Licensee Event Report was submitted pursuant to 10 CFR 50.73(a)(2)(ii). Subsequent evaluations have concluded that the stresses for the containment cooling fan heat exchanger housings have always been within allowable limits, and therefore seismically qualified.

DESCRIPTION OF EVENT

Wolf Creek Nuclear Operating Corporation (WCNOC) was notified by the plant's Architect/Engineer, Bechtel Power Corporation, that generic errors/discrepancies had been identified in seismic analysis reports prepared by American Air Filter (AAF). These errors were discovered during qualification of equipment by analysis. The only safety-related AAF equipment installed at WCGS are the four containment cooling fan heat exchangers.

After conducting a thorough review of the identified discrepancies, WCNOC engineering personnel performed a calculation on November 17, 1989, which determined that the cooling fan heat exchanger housings would be over stressed when subjected to the peak ground acceleration for a Safe Shutdown Earthquake. At that time the unit was operating in Mode 1, Power Operation, at approximately 100 percent rated thermal power.

Based on the calculation results, both trains of containment cooling fans were declared inoperable at 1151 CST on November 17, 1989. An entry was made into Technical Specification 3.6.2.3, Action 'b', which requires that with two groups of containment cooling fans inoperable and both Containment Spray Systems [BE] operable, restore at least one group of cooling fans to operable status within 72 hours or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours and restore both groups of cooling fans to operable status within 7 days of initial loss or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours.

A plant modification package was developed to install additional seismic restraints to restore the containment cooling fans to operable status. Installation of the restraints on the 'B' train containment cooling fan heat

exchanger housings was completed at 1731 CST on November 19, 1989, thereby restoring one train to operable status. This modification subsequently was completed on the 'A' train containment cooling fan heat exchanger housings at 1305 CST on November 20, 1989, and Technical Specification 3.6.2.3, Action 'b' was exited at that time. Throughout this event, the unit remained in Mode 1, Power Operation.

Further review and evaluation of the methodology utilized to determine seismic qualification of the containment cooling fan heat exchanger housings was conducted. This effort included a review of the conservatisms utilized in the November, 1989, calculation to determine seismic qualification. This review has been completed, and it has been determined that the original November, 1989, calculation was overly conservative in that it used a generic conservative response spectra, conservative boundary conditions and a single degree of freedom lumped mass model, which resulted in high member stresses being indicated.

A detailed analysis, based on a finite element approach using response spectra input via the flooring beneath the housings, has been performed. This analysis modeled all cooler stiffening members and containment floor beams with partial composite sections and used a floor response spectra appropriate to the cooler location. The finite element analysis results showed the containment cooler housings stresses were within allowable values.

ADDITIONAL INFORMATION

The Containment Cooling System consists of two trains of Containment Spray and two trains of containment cooling fans. The current WCGS containment [NH] analysis assumes the single failure of one protection train (i.e., loss of one train of Containment Spray and one train of containment cooling fans) and therefore takes credit for one train of Containment Spray and one train of containment cooling fans. Consequently, the situation described in Revision 0 of this report, namely, the postulated failure of both trains of containment cooling fans upon occurrence of a Safe Shutdown Earthquake, represented a condition outside the design basis of the plant. It has subsequently been determined that the configuration of the containment cooling fan heat exchanger housings has always been adequate to ensure adherence to seismic design requirements.