

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Wolf Creek Generating Station										DOCKET NUMBER (2) 0 5 0 0 0 4 8 2 1 OF 0 4										PAGE (3) 1					
TITLE (4) Manual Reactor Trip Due To Fouling of Circulating Water Traveling Screens																									
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)			
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1 0		0 7		8 5		8 5		0 6		9 0		0 0		1 1		0 5 8 5						0 5 0 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																									
POWER LEVEL (10)				20.402(b) 20.406(c) 60.73(a)(2)(iv) 73.71(b)																					
0 3 4				20.406(a)(1)(i) 60.36(c)(1) 60.73(a)(2)(v) 73.71(c)																					
				20.406(a)(1)(ii) 60.36(c)(2) 60.73(a)(2)(vi) OTHER (Specify in Abstract below and in Text, NRC Form 366A)																					
				20.406(a)(1)(iii) 60.73(a)(2)(i) 60.73(a)(2)(viii)(A)																					
				20.406(a)(1)(iv) 60.73(a)(2)(ii) 60.73(a)(2)(viii)(B)																					
				20.406(a)(1)(v) 60.73(a)(2)(iii) 60.73(a)(2)(x)																					
LICENSEE CONTACT FOR THIS LER (12)																									
NAME Merlin G. Williams - Superintendent of Regulatory, Quality, and Administrative Services														TELEPHONE NUMBER AREA CODE 3 1 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 NRC		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC							
B		K I E		I T B I G X		9 9 9 9		No		C		K I P		I I P F		1 0 1 9		No							
C		K I E		I S C I N		I I I I		No																	
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)																									
<p>At 1355 CDT on October 7, 1985, a Reactor trip was manually initiated from approximately 34 percent power following a controlled reduction from 100 percent power due to fouling of the traveling screens at the Circulating Water Screen House. The Reactor trip caused a Turbine trip, Feedwater Isolation, Steam Generator Blowdown and Sample Isolation and Auxiliary Feedwater Actuation according to design. During the resulting trip transient, all required Engineered Safety Features and Reactor Protection System equipment functioned properly.</p> <p>A combination of natural phenomena resulted in aquatic plants from the plant cooling lake building up on the traveling screens. The resulting increased differential pressure on the traveling screens resulted in sheared drive pins, buckled screen segments and the collapse of a portion of one traveling screen. The screen collapse also resulted in damage to the diesel fire pump.</p> <p>The electric fire pump remained fully operable throughout this time and measures have been taken to compensate for the inoperable diesel fire pump. Repairs to the traveling screens have been completed and they have been returned to normal operation. Station environmental personnel are evaluating available options to control cooling lake submerged plants during future growth cycles.</p> <p>At no time during the event did conditions develop which could have threatened the health or safety of the public. There have been no previous similar occurrences.</p>																									
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U.S. GPO: 1984-0-454-481/1875																									

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	0500048285	—	069	—	00	02	OF 04

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At 1335 CDT on October 7, 1985, a Reactor trip was manually initiated from approximately 34 percent power following a controlled power reduction from 100 percent reactor power. The power reduction and Reactor trip were necessary due to fouling of the Circulating Water Screen House traveling screens [KE-SCN], which affected the performance of the Circulating Water System [KE] and Service Water System [KG]. The Essential Service Water System [BI] had been placed in operation and divorced from the Service Water System at 1257 CDT, early in the power reduction sequence.

The manual Reactor trip initiated a Main Turbine trip, and when Reactor Coolant System (RCS) [AB] average temperature decreased to the low temperature setpoint (564 degrees F) a Feedwater Isolation was automatically initiated. Shortly thereafter Steam Generator [AB-SG] water levels reached the low-low level setpoint initiating a motor-driven and turbine-driven Auxiliary Feedwater Actuation and a Steam Generator Blowdown and Sample Isolation. All required Engineered Safety Features and Reactor Protection System equipment functioned properly.

Plant response to the Reactor trip was normal. Steam Generator levels reached a minimum of 5 percent narrow range indication and RCS average temperature decreased to a minimum of 553 degrees F. Following the trip, all running Circulating Water pumps [KE-P] and Service Water pumps [KG-P] were secured. The Main Steam Line Isolation Valves [SB-ISV] were slow closed and the Steam Generator Power Operated Relief Valves [SB-RV] were used for decay heat removal.

The cause of this event, fouling of the Circulating Water Screen House (CWSH) traveling screens, was due to a combination of natural phenomena. Aquatic plants, of the genus Potamogeton, grow abundantly in the plant cooling lake [BS] through the summer. In the fall, the growth cycle ends and the stems weaken, becoming susceptible to breakage by wave action. Unseasonably cool weather this fall had accelerated this process. On October 7, 1985, a strong south wind resulted in an abundance of the plants becoming entrained in the lake water and overloading the CWSH traveling screens. The CWSH is located on the north end of the lake with the intake traveling screens facing south. This situation did not affect the Essential Service Water intake from the cooling lake which is similarly located on the north end of the lake with intake traveling screens facing east.

Subsequent investigation determined that some of the instrumentation monitoring the CWSH traveling screens differential pressure was inoperable due to broken air supply tubing [KE-TBG]. This prevented early warning of screen fouling in two of the three intake bays and prevented automatic starting of the traveling screens (two per bay) associated with these two bays. When annunciation was received indicating CWSH screen overload, the water level in these two bays had already decreased several feet below lake level.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

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Attempts to clear the accumulation of plants from the traveling screens were unsuccessful. The weight of the vegetation on the screens coupled with the large differential pressures across the screens resulted in breakage of traveling screen drive shear pins, buckling of many individual screen segments and the collapse of a portion of one traveling screen assembly.

An underwater inspection did not identify any damage to the pumps located in the CWSH intake bays, but did indicate that vegetation may have entered the Circulating Water System since the Circulating Water pump in the bay with the collapsed screen was in operation when the screen collapsed. An inspection of the Condenser [SG] water boxes confirmed the presence of significant quantities of plant material. The water boxes were cleaned and the Circulating Water System was flushed and returned to service.

Subsequent performance of a scheduled surveillance test on the diesel driven fire pump [KP-P] identified that this pump was inoperable and had been damaged when the traveling screen collapsed. The fire pump had been displaced by the force of the intruding water when the screen collapsed, resulting in the deformation of a section of the pump casing. The deformation was above the normal water level where the casing penetrates the concrete floor of the CWSH. This damage was not visible to the divers performing the earlier underwater inspection. Following disassembly of the fire pump it was determined that the pumpshaft had also been damaged and that the casing damage coupled with the bent shaft had bound the pump impeller.

As a result of the diesel fire pump being inoperable, Technical Specification 3.7.10.1, Action Statement a, was exceeded. This specification allows one of the two fire suppression pumps to be inoperable for no more than 7 days. The electric fire pump [KP-P] was fully operable throughout this time period. As compensation for the inoperable diesel fire pump, additional electric fire pumps (used during construction) were made available to the plant fire water system [KP], availability of a local fire department pumper truck was confirmed, and two diesel driven temporary pumps were mounted at the CWSH and tied into the plant fire water system. A replacement permanent pump is expected to be installed and placed in operation in early November, 1985.

The diesel fire pump is a Fairbanks Morse, 3 stage Vertical Turbine Pump, Model 6927F.

The instrument air supply tubing failure is believed to have been caused by wave action flexing the rigid copper tubing at a fitting connection, ultimately leading to fatigue failure. The tubing susceptible to wave action has been replaced with flexible tubing to prevent recurrence and the instruments monitoring the CWSH traveling screens differential pressure have been returned to service.

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

The traveling screens were manufactured by Envirox, Water Quality Control Division and are described as 6 tooth, 24 inch pitch, 3/8 chain side bar with intermediate frame.

Repairs to the damaged screens (except the one which collapsed) were completed and the traveling screens were returned to service shortly after the event. The plant returned to power operation at approximately 2010 on October 9, 1985, at a reduced reactor power (approximately 90 percent) since repairs to the collapsed screen prevented operation of one of the Circulating Water pumps. Repairs to the collapsed screen were completed on October 26, 1985, and the plant returned to normal power operation.

Station environmental personnel are evaluating available options including chemical or possibly biological means to control cooling lake submerged plants during future growth cycles.

While some non-safety plant equipment was damaged during this event, safety-related equipment functioned properly per design. At no time during the event did conditions develop which posed a threat to the health or safety of the public. There have been no previous similar occurrences.



KANSAS GAS AND ELECTRIC COMPANY

GLENN L. KOESTER
VICE PRESIDENT - NUCLEAR

November 5, 1985

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Mr. E.H. Johnson, Acting Director
Division of Reactor Safety and Projects
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

KMLNRC 85-247
Re: Docket No. STN 50-482
Subj: Licensee Event Report 85-069-00

Gentlemen:

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73 (a) (2) (i) and 10 CFR 50.73 (a) (2) (iv).

Yours very truly,

Glenn L. Koester
Vice President - Nuclear

GLK:see

Enclosure

xc: PO'Connor (2), w/a
JCummins, w/a

IE22
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