WOLF CREEK
NUCLEAR OPERATING CORPORATION

Otto L. Maynard
Vice President Plant Operations

January 25, 1996

WO 96-0011

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 95-007-00

Gentlemen:

The attached Licensee Event Report is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B) concerning a condition that resulted in the plant being in a condition that was outside the design basis of the plant. This was due to low control voltage caused by extensive run of control wiring coincident with a Control Room fire.

If you should have any questions regarding this submittal, please contact me at (316) 364-8831 extension 4450, or William M. Lindsay at extension 8760.

Very truly yours,

Otto L. Maynard

OLM/jad

Attachment

cc: L. J. Callan (NRC), w/a
W. D. Johnson (NRC), w/a
J. F. Ringwald (NRC), w/a
J. C. Stone (NRC), w/a

IE22
1/1

NRC FORM 366 (5-92)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
WOLF CREEK GENERATING STATION	05000482	1 OF 5

TITLE (4)

Loss of "B" Train Essential Service Water Due to Low Control Voltage Caused by Extensive Run of Control Wiring

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
12	29	95	95	007	00	01	25	96	FACILITY NAME	DOCKET NUMBER

OPERATING	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER	100%		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
			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)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
			20.405(a)(1)(iv)	X	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 (Include Area Code)
William M. Lindsay Manager Performance Assessment	316-364-8831, ext. 8760

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
B	GD	FAN		N						

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

ABSTRACT:

On December 29, 1995, at 1416 CST, the Essential Service Water (ESW) Supply Fan "B" failed to start when personnel placed the Normal, Iso/Run (ISO/RUN) selector switch in the ISO/RUN position. Investigation into the failure determined that an excessive length of control wiring (approximately 14,000 ft) caused a voltage drop which prevented the ESW Supply Fan "B" from starting in the ISO/RUN Mode. The failure of the supply fan to start rendered the "B" Train of ESW inoperable. Train "B" is the only train with the ability to be isolated from the Control Room during a Control Room evacuation. The system configuration has been changed to include a jumper to correct the low voltage problem.

Plant Conditions At The Time Of Discovery Of The Event:

Plant Operational Condition: Mode 1
Plant Power level: 100%

Basis for Reportability:

On December 29, 1995, at 1416 CST, the Essential Service Water (ESW) Supply Fan "B" [BI-FAN] failed to start when personnel placed the Normal, Iso/Run (ISO/RUN) selector switch in the ISO/RUN position. Investigation into the failure determined that an excessive length of control wiring (approximately 14,000 ft) caused a voltage drop which prevented the ESW Supply Fan "B" from starting in the ISO/RUN Mode. The failure of the supply fan to start rendered the "B" Train of ESW inoperable. The function of the ISO/RUN switch position is to separate the potentially damaged control circuit in the Control Room during and following a fire in the Control Room from the equipment and to ensure the availability of the equipment necessary to maintain the reactor in a safe shutdown condition. The required four hour report to the NRC Operations Center was made on December 29, 1995, at 1545 CST, pursuant to 10 CFR 50.72(b)(2)(iii), as a condition that could have prevented the fulfillment of a safety function needed to maintain the reactor in a safe shutdown condition. Further research has determined that the condition should have been initially reported pursuant to 10 CFR 50.72 (b)(1)(ii) as a condition that resulted in the plant being in a condition that was outside the design basis of the plant. Therefore, the initial notification of this event is being changed to be reportable pursuant to 10 CFR 50.72(b)(1)(ii) This event is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the plant being in a condition that was outside the design basis of the plant.

Description of Event:

On December 28, 1995, at approximately 1845 CST, Instrumentation and Control personnel were tasked with performing a partial instrumentation loop calibration for the ESW Supply Fan "B" in accordance with Surveillance Test STN IC-466, "Calibration of ESW Pump Room Temperature Control Loop GDLPT0011." During system alignment, Operations personnel discovered the indicating lights on the handswitch for ESW Supply Fan "B" were not lighted and that the ESW Supply Fan "B" would not start. The indicating bulbs were checked and found to be operable. Since the operability of the fan was indeterminate, the fan was declared inoperable. The fan is considered a necessary support system; therefore, the "B" Train of ESW was declared inoperable and Technical Specification 3.7.4 LCO was entered. During investigation, the selector switch for isolating the supply fan from the Control Room during a Control Room evacuation was found to be in the ISO/RUN position. Initial

indications support that the ISO/RUN selector switch was inadvertently repositioned during the construction of scaffolding near the location of the switch. The indication on the handswitch in the Control Room returned when the ISO/RUN switch was returned to the "Normal" position. At approximately 2210 CST, during the performance of STN IC-466, the operator placed the selector handswitch in the ISO/RUN position to start the supply fan, but the fan failed to start.

On December 29, 1995, an investigation into the failure of the supply fan found a failed relay. This failure was due to thermal degradation of the coil insulation. This degradation was caused by the ISO/RUN switch being placed in the ISO/RUN position and the long circuit length which together caused the relay to draw inrush (pick-up) current for an extended period of time since the voltage was inadequate to pick up the relay. Even though the ESW "B" system was still declared inoperable, the failure of the ESW Supply Fan "B" to start was determined to be potentially reportable and the NRC Operations Center was notified at 1545 CST.

The ISO/RUN selector switch allows operators to maintain the reactor in a safe shutdown condition from outside the Control Room when a Control Room evacuation is necessary. The ability to separate circuits from the Control Room is limited to the "B" Train equipment. The problem with the control circuit length in the ISO/RUN mode of operation would not have prevented the supply fan from performing its design function for any scenarios other than a Control Room evacuation.

The ISO/RUN control circuit for the ESW Supply Fan "B" went from the power supply in the ESW Building to the ISO/RUN selector switch in the Control Building, back to the ESW building to go through the thermal overload contacts in the motor controller, to the ISO/RUN selector switch in the Control Building and then back to the motor starter in the ESW Building. Each run of control wiring is approximately 3500 ft.

The ISO/RUN circuit was installed during construction and successfully passed the functional tests during start-up of the system. It is unknown as to why the relay functioned during start-up testing with the extensive amount of control wiring.

The ISO/RUN selector switches located on the Hot Shutdown Panel are tested on an eighteen month frequency. The ISO/RUN selector switches not located on the Hot Shutdown Panel have not been included in a testing program.

Root Cause and Corrective Actions:

Root Cause:

The root cause of the extensive length of control circuit wiring for this ISO/RUN selector switch appears to be personnel error on the part of the original Architect/Engineer (A/E). Calculations by the A/E were in place which provided a maximum control circuit length. However, the design of this control circuit exceeded that length without reconciliation.

Due to the length of time since initial plant start-up, it is indeterminate as to why certain ISO/RUN selector switches were omitted from periodic testing.

Contributing Factors:

The circuit was added near the end of construction in response to a review of the SNUPPS Fire Protection Program.

Corrective Actions:

Immediate:

The system was modified to installed a jumper which effectively cut the circuit length in half, thereby correcting the voltage drop problem. After successfully demonstrating the operability of the ESW Supply Fan "B" through the performance of STN IC-466, including using ISO/RUN selector switch, the system was returned to normal and the Technical Specification 3.7.4 action statement was exited. Corrective actions for this have been completed.

Performance Improvement Request 95-3061 was generated to investigate the selector switch being in the ISO/RUN position rather than the Normal position. Initial indications support that the ISO/RUN selector switch was inadvertently repositioned during the construction of scaffolding near the location of the switch. Corrective actions for this issue were completed on January 9, 1996, and included immediately placing the ISO/RUN Selector Switch in the "Normal" position, relocating the scaffolding away from the switch, and instructing the personnel responsible for erecting scaffolding to use extreme caution not to damage plant equipment and components when erecting scaffolding.

Performance Improvement Request 95-3074 was initiated to identify the programmatic issues associated with this event, document corrective actions to resolve any identified issues,

and ensure other circuits were evaluated to determine if similar conditions existed. The following corrective actions taken were completed January 26, 1996. Total circuit lengths for all other control circuits between the Power Block and ESW Pump House have been reviewed for excessive circuit lengths and all have been found to be enveloped by calculation. This search consisted of evaluating all control circuits utilizing 14 AWG control wire which exceeded 1000 ft. No additional circuits were identified which had not been previously evaluated or which were susceptible to excessive voltage drop. A similar review of ESW control circuits was conducted during the WCGS Electrical Distribution Safety Functional Assessment, but this review failed to consider ESW support systems. The present review included all circuits to the ESW Pump House. All corrective actions to resolve this issue have been completed.

Long-term:

Performance Improvement Request 96-0015 was generated to document the ISO/RUN selector switches not being included in a periodic testing program. The switches will be tested during the next refueling outage. WCGS will evaluate the need to include these selector switches in a periodic testing program. Corrective actions associated with this issue will be completed by April 30,1996.

Safety Significance:

The safety significance of this problem has been evaluated and determined to be low. The basis for this determination is that a Control Room fire has a very low probability of occurrence and a fire that affected this particular control circuit is even less probable. In addition, the ESW System would initially be able to perform its safety design function. However, without the supply fan operating, the ESW Pump House temperature would eventually exceed the maximum temperature limit (122°F) and operator action would be required to ensure its long-term capability. This reliance on operator action is not considered unreasonable or heroic for the postulated scenario.

Other Previous Occurrences:

No similar events have occurred.