

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Otto L. Maynard
Vice President Plant Operations

February 7, 1996

WO 96-0017

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

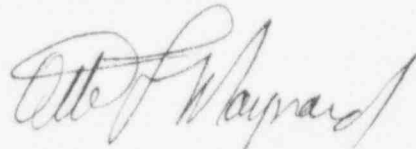
Subject: Docket No. 50-482: Licensee Event Report 95-003-01

Gentlemen:

The attached revised Licensee Event Report (LER) is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) concerning a failure to comply with the Technical Specifications. This report has been revised to provide additional information regarding the root cause and corrective actions associated with the event.

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

9602120342 960207
PDR ADOCK 05000482
S PDR

120049

IE22
11

LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1) WOLF CREEK GENERATING STATION	DOCKET NUMBER (2) 05000482	PAGE (3) 1 OF 6
--	-------------------------------	--------------------

TITLE (4) Failure to Implement Proper Isolation And Separation Of Temporary Cables

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
07	19	95	95	003	01	02	07	95	FACILITY NAME	DOCKET NUMBER

OPERATING	8	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER	0%	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)	X	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 William M. Lindsay Manager Performance Assessment	TELEPHONE NUMBER (Include Area Code) 316-364-8831
--	--

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
N/A									

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, completed EXPECTED SUBMISSION DATE)	X	NO	EXPECTED	MONTH	DAY	YEAR
---	---	----	----------	-------	-----	------

ABSTRACT:

On July 19, 1995, at 1522 hours, Wolf Creek Nuclear Operating Corporation (WCNOC) identified that, during the period of October 8 through 12, 1991, while in Mode 6 of re-fueling outage V, temporary electrical cables were installed which did not provide either the proper electrical isolation or the separation required by IEEE 384-1974 and Regulatory Guide 1.75-1978, Revision 2. A temporary electrical cable was installed, from a spare load center breaker on an operable bus to a spare battery charger on an inoperable bus, in accordance with procedure MGE TP-003, Revision 0, "Supply to MK Bus From Spare Charger NK25 (NB Outage)." This installation configuration allowed the spare charger to maintain power to two inoperable direct current buses and the associated batteries.

The root cause of this occurrence was insufficient personnel awareness of isolation and separation requirements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	003	01	2 OF 6

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

Plant Conditions During the Incident:

Operational Status = Mode 6.

Reactor Coolant Temperature = 88 degrees

Reactor Coolant Pressure = Atmospheric

Reactor Power = 0

Basis for Reportability:

10CFR50.73(a)(2)(i)(B) requires the licensee to report any operation or condition prohibited by the plant's Technical Specifications. The equipment to which the cable was attached (a portion of load center NG02 [ED]) should have been considered inoperable during October 8 through 12 of 1991. Since the alternate train of equipment was also declared inoperable for maintenance purposes at the time of the installation, Technical Specification 3.8.3.2 should have been entered. The Mode 6 action for this Technical Specification requires the immediate suspension of all operations involving core alterations, positive reactivity changes, or movement of irradiated fuel. Because the inoperability of NG02 equipment was not identified, WCNOG continued to move fuel through this period of time. Therefore, this condition is reportable under the provisions of 10CFR50.73(a)(2)(i)(B).

Description of Event:

During October 8 through 12, 1991, an NB01 system [EB] maintenance outage was performed. The plant was in Refueling Outage V, and in Mode 6. Temporary cables were installed from spare safety-related NG0209 load center breaker [ED] to the load side connections of open NG0109 breaker. Breaker NG0109 [ED] normally supplies power to a spare NK25 battery charger [EJ]. Temporary cables were then run from the output side of the NK25 spare battery charger to NK01 and NK03 electrical buses[EJ], to provide a temporary source of power to these buses, as well as keep the NK11 and NK13 batteries [EJ] fully charged. Procedure MGE TP-003, Revision 0, "Supply to NK Bus From Spare Charger," was used to install the temporary cable configuration. This procedure is only applicable during Modes 5 and 6.

During the above evolution, the NK01 and NK03 electrical buses were considered to be out-of-service, and the associated temporary cable configuration that was feeding power to

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station	05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 6
		95	003	01	

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

the NK01 and NK03 buses was classified as a non-nuclear safety related (NNSR) installation.

This temporary NNSP cable configuration constituted an associated circuit, as defined by Section 3.0 of the Institute of Electrical and Electronics Engineers (IEEE) Standard 384-1974, "Trial-Use Standard Criteria for Separation of Class 1E Equipment and Circuits." This standard defines an associated circuit as "Non-Class 1E circuits that share power supplies, enclosures, or raceways with Class 1E circuits...." Section 4.5 of Standard 384 further states that associated circuits shall either be treated as safety-related circuits, or they shall have an acceptable isolation device and the circuitry up to the device shall be treated as safety-related; while the circuitry beyond the device may be treated as non-safety-related (provided it doesn't again become associated with Class 1E circuits).

Standard 384 also defines an isolation device as "A device in a circuit which prevents malfunctions in one section of a circuit from causing unacceptable influences in other sections of the circuit or other circuits." Regulatory Guide 1.75-1978, Revision 2, "Physical Independence of Electric Systems," Section C.1, supplements this definition by stating that "...Interrupting devices actuated only by fault current are not considered to be isolation devices within the context of this document."

Additionally, Regulatory Guide 1.75 states that "Breakers that trip on receipt of a signal other than one derived from the fault current or its effects (e.g., an accident signal) are acceptable...." The WCNOG design utilizes breaker shunt trip devices on breakers actuated by an accident signal to achieve separation of NNSR loads from safety buses.

An Engineering evaluation has determined that proper breaker coordination did exist between the NG0209 breaker (feeding the NNSR cable to the NK25 charger) and breaker NG0201 [ED] (the next upstream breaker). Adequate overcurrent protection was also provided for the cable used to supply 480 VAC power to the NK25 charger. The breaker electrical trip mechanism (Solid State Trip [SST]) had been set with identical settings as the normal NK25 feeder breaker, and had been calibrated prior to implementing procedure MGE TP-003. Therefore, had a fault occurred on the NNSR cable, the NG0209 breaker would have opened prior to the upstream NG0201 breaker. This would have assured that the NG02 load center would have maintained an uninterrupted source of power to all associated loads.

During the Engineering evaluation, it was discovered that the NNSR cable that was installed from NG0209 to NG0109 did not have the proper separation distance as required by IEEE 384-1974. The standard requires a separation distance of three feet horizontally and

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	003	01	4 OF 6

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

five feet vertically between cables of different separation groups. Since the temporary NNSR cable was not secured or restrained by approved seismically qualified supports, the potential existed for the cables to become nicked and come into contact with the safety related cables or bus bars in the same wireway. This could have caused short circuits or ground faults capable of tripping the load center feeder breaker.

Additionally, the temporary cable configuration was not tested during the equipment qualification, and an approved fire wrap was not used to obtain adequate separation. Based on these facts, the potential for creating faults in the safety-related circuits in the immediate vicinity of breakers NG0207 [ED] and NG0208 [ED] during a seismic event did exist, although the probability of such an occurrence was low. Such a fault, with this configuration, could have resulted in the loss of safety function for the associated loads.

Root Cause and Corrective Actions:

Root Cause:

Although the installation of temporary cable for providing temporary power to the "A" train bus and batteries was performed in accordance with approved procedure MGE TP-003, Revision 0, "Supply to NK Bus From Spare Charger NK25 (NB Outage)," this procedure ineffectively controlled the installation configuration and design requirements of proper separation and isolation. Revision 0 of MGE TP-003 did not address all the requirements contained in Regulatory Guide 1.75-1978, Revision 2. The proper electrical isolation of the temporary cable configuration and the correct attachment and physical separation from adjacent safety related electrical equipment was not addressed in the procedure. In addition, the safety evaluation associated with the procedure did not properly consider isolation and separation concerns.

The original review and safety evaluation of Revision 0 of MGE TP-003 was performed by the Results Engineering organization. This organization no longer exists. The Results Engineering engineers who originally performed the evaluation were not sufficiently versed in the applicable requirements. They were unaware of some of the Regulatory Guide 1.75-1978, Revision 2, design requirements for proper isolation and separation of Class IE circuits. The root cause of the improper configuration allowed within the procedure is therefore attributed to insufficient personnel awareness of the regulatory requirements for isolation and separation.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station	05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
		95	003	01	

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

Corrective Actions:

The following corrective actions were implemented.

- To prevent recurrence of the same isolation and separation condition associated with procedure MGE TP-003, the procedure was revised on October 25, 1995 to provide a temporary cable configuration to power the out-of-service trains from a non-safety related power source.
- To verify that other means of cross-tying did not exist in addition to procedure MGE TP-003, work requests associated with the spare NK25 battery charger were reviewed by electrical discipline qualified System Engineering personnel. This review verified that the isolation and separation concerns did not occur by other means of cross-tying to feed the spare NK25 battery charger. No other such incidents were identified in this review.
- The above review was later expanded to evaluate whether there might be a generic issue involving the incorrect cross-tying of other operable Class IE systems or components, by use of temporary cables, to power non-operable components or systems. This review identified two such incidents. Neither of these incidents resulted in inoperable equipment; nor were the incidents reportable. Performance Improvement Requests (PIRs) 96-0083, 96-0254, 96-0255, 96-0256, 96-0257, and 96-0258 were issued to address further evaluation and corrective actions.
- Since this occurrence, a "Qualified Reviewer" procedure program has been developed. Although this program was not developed as corrective action for the concern identified in this Licensee Event Report, it was developed since the separation and isolation event occurred, and provides effective control over the procedure review and approval process.

This "Qualified Reviewer" program provides cross-disciplinary review for initial procedure development and revisions. The cross-disciplinary review consists of having procedure reviews and safety evaluations performed by both affected and non-affected work groups. This process draws on the knowledge from a larger number of individuals, and these individuals are selected based on their expertise in the subject matter of the affected procedure. Therefore, the "Qualified Reviewer" program utilizes the expertise of the organization to assure that similar situations will not be overlooked. This program provides assurance that the root cause of insufficient personnel awareness of electrical isolation and separation requirements will not recur.

The above corrective actions are deemed adequate to prevent recurrence of this problem.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
			YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station		05000482	95	003	01	6 OF 6

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

Safety Significance:

The failure to maintain correct electrical isolation and separation and to identify the inoperable status of NG02 equipment from October 8 through October 12, 1991, did not result in any adverse consequences to the plant. Public health and safety were assured at all times.

Other Previous Occurrences:

No other previous reportable events have been identified.