

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Otto L. Maynard
Vice President Plant Operations

October 5, 1995

WO 95-0143

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 95-005-00

Gentlemen:

The attached voluntary Licensee Event Report (LER) is being submitted concerning an unanticipated failure to comply with license condition 2.C(5).

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

Very truly yours,



Otto L. Maynard

OLM/jad

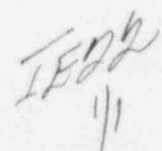
Attachment

cc: L. J. Callan (NRC), w/a
D. F. Kirsch (NRC), w/a
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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 PAPERWORD 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 12
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TITLE (4)
Failure To Develop An Adequate Fire Protection Program Emergency Lighting

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
9	7	95	95	005	00	10	5	95	FACILITY NAME	DOCKET NUMBER

OPERATING	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		20 402(b)		20 405(c)		50 73(a)(2)(iv)		73 71(b)		
POWER	100%	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		
		20 405(a)(1)(iii)		50 73(a)(2)(i)		50 73(a)(2)(viii)(A)		License Condition 2 F		
		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) 316-364-8760
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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)	EXPECTED	MONTH	DAY	YEAR
YES (If yes, completed EXPECTED SUBMISSION DATE)	X			
	NO			

ABSTRACT:

On July 19, 1995, the Nuclear Regulatory Commission identified a concern with the emergency lighting for Valve EF HV00052, "Essential Service Water "B" To Component Cooling Water Heat Exchanger "B". Because of this concern, Wolf Creek Nuclear Operating Corporation (WCNOC) conducted an evaluation of the emergency lighting program. The evaluation included the performance of a plant walkdown, conducted with normal and standby lighting turned off, to verify the adequacy of the installed emergency lighting. WCNOC determined that the existing emergency lighting met the Updated Safety Analysis Report commitments but did not adequately meet the additional emergency lighting requirements specified in the WCNOC Safety Evaluation Report (NUREG-0881).

The root cause of this problem is cognitive personnel error in failing to identify the additional emergency lighting requirements, outlined in the SER as referenced in the WCNOC License, and failing to assure the necessary program and procedures were in place to implement the requirements. WCNOC will have the necessary emergency lighting programs and procedures in place by December 15, 1995.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	2 OF 12

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

Plant Conditions At The Time Of Discovery Of The Event:

MODE 1
Reactor Power 100%

Basis for Reportability:

The Wolf Creek Nuclear Operating Corporation (WCNOC) Facility Operating License NPF-42 Condition 2.F states:

"Except as otherwise provided in the Technical Specifications or Environmental Protection Plan, the licensee shall report any violations of requirements contained in Section 2.C of this license in the following manner: initial notification shall be made within 24 hours to the NRC Operations Center via the Emergency Notification System with written followup within thirty days in accordance with the procedures described in 10 CFR 50.73(b), (c) and (e)."

The Wolf Creek Nuclear Operating Corporation (WCNOC) Facility Operating License NPF-42 Condition 2.C(5), "Fire Protection (Section 9.5.1, SER, Section 9.5.1.8, SSER #5)," Sub-Section (a) states in part:

"The Operating Corporation shall maintain in effect all provisions of the approved fire protection program as described in the SNUPPS Final Safety Analysis Report for the facility through Revision 17, the Wolf Creek site addendum through Revision 15, and as approved in the SER through Supplement 5...."

Contrary to the above WCNOC did not establish programmatic requirements for emergency lighting to meet the requirements specified in the Wolf Creek Safety Evaluation Report (SER) NUREG-0881, which were in addition to the Updated Safety Analysis Report Commitments. WCNOC failed to establish and maintain emergency lighting in all areas of the facility where operator actions are required but the areas not normally manned. Therefore this failure is reportable pursuant the requirements of License Condition 2.F.

Description of Event:

The Nuclear Regulatory Commission (NRC), on August 29, 1995, issued NRC Information Notice 95-36, "Potential Problems With Post-Fire Emergency Lighting." This information notice, in part discusses four examples of licensees' failure to establish and maintain adequate emergency lighting.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	3 OF 12

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

The NRC, between the dates of July 17, 1995, and July 21, 1995, conducted an inspection of WCNOC's Fire Protection Program. This inspection in part evaluated the adequacy of WCNOC's emergency lighting. On July 19, 1995, the NRC Inspection Team questioned the adequacy of the emergency lighting for Valve EF HV00052, "Essential Service Water "B" To Component Cooling Water Heat Exchanger "B"." The NRC issued Notice Of Violation 482/9519-01 to document and to assure adequate resolution of the concern. WCNOC responded to Notice Of Violation 482/9519-01 in Letter WM 95-0126.

Based on the concerns identified in the above discussed documents, WCNOC is conducting a thorough evaluation of its emergency lighting. This evaluation includes a review of the emergency lighting as described in the WCNOC Safety Analysis Report and in the WCNOC SER, a review of the established emergency lights, and the performance of a plant walkdown. The plant walkdown was conducted with normal and standby lighting turned off. This walkdown was conducted to determine the adequacy of installed emergency lighting, the adequacy of the aiming of emergency lights, and to determine WCNOC's ability to safely implement Procedure OFN RP-017, Revision 4, "Control Room Evacuation;" EMG C-0, Revision 7, "Loss Of All AC Power;" OFN NB-034, Revision 0, "Loss OF All AC Power - Shutdown Conditions."

Plant Walkdown:

The initial step in the corrective action plan was to perform a plant walkdown by Operations and Engineering personnel to determine if sufficient emergency lighting existed in all areas of the plant where operator actions are required. Temporary procedure (TMP) 95-ENG-190 was developed and issued to perform the walkdown.

Walkdown Purpose:

The purpose of the walkdown was to 1) Verify the adequacy of the emergency lighting levels in the plant as needed by operators to perform safe shutdown actions per OFN RP-017 "Control Room Evacuation", EMG C-0, " Loss of All AC Power", and OFN NB-034, "Loss of All AC- Shutdown Conditions", 2) To establish the specific aiming requirements for the emergency lights in these areas, and 3) To identify the lighting units which need to be classified as USAR (emergency lighting defined as needed for response to a fire in the Control Room). The loss of all AC power actions were included to ensure that lights which were needed to perform dual procedural requirements were not re-aimed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	4 OF 12

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

Walkdown Scope:

The walkdown scope included the emergency lighting provided in areas of the plant required to be manned for safe shutdown, areas of the plant where operators must perform local action for safe shutdown, and access and egress to these areas as required by OFN RP-017, EMG C-0, and OFN NB-034.

The following set of assumptions and limitations were established:

- No walkdown was performed in Containment due to personnel exposure and safety concerns. No operator actions are required in Containment for OFN RP-017.
- The walkdown was not performed for the Control Room or Security Central Alarm Station (CAS) for plant safety reasons. The emergency lighting for the Control Room and the CAS is provided by a safety-related battery back up system and is assumed to be adequate.
- Lighting in the office/corridor areas of the 2047 elevation of the Communication Corridor (out side the Control Room), and the 1984 elevation of the Control Building and Communication Corridor (Access Control and Hot Lab) were not walked down. Emergency lighting is assumed to be adequate for access and egress through these areas. No specific operator actions are required in these areas.
- It was assumed that for OFN NB-34 and EMG C-0 actions outside of power block structures the operator can locate the structure or equipment using daylight or normal outside nighttime lighting levels. Hand held lighting would then be available to assist the operator in performing the specific action.
- Lighting in the Fuel Building was walked down without securing normal and standby lighting. No actions per OFN RP-017 are required in the Fuel Building.

Walkdown Methodology And Acceptance Criteria:

Both the normal and standby lighting were secured for those areas where operator actions are required by OFN RP-017. The areas and equipment were walked down to establish if emergency lighting was adequate in the "as found" condition.

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)
Wolf Creek Generating Station	05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 12
		95	005	00	

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

Adequacy of lighting for OFN RP-017 actions was based on Operator and Engineering judgment that the required operator actions could be performed with the Emergency lighting levels and without the use of portable hand held lighting. Emergency lighting for access and egress to these areas and equipment was also considered.

Adequacy of lighting for both EMG C-0, and OFN NB-034 was based on the ability to access and locate the equipment and then egress. It was assumed that hand held portable lighting is available to assist the Operator.

If the as-found lighting levels were determined to be unsatisfactory, lighting was re-aimed, if possible, to enhance the lighting.

Plant electrical drawings E-1L8900 Sheets 10 through 10AA, and procedure MPE BA-010 "Preventative Maintenance of Teledyne Emergency Lighting", Attachment B were used to verify emergency lighting classification and aiming requirements and then marked-up to reflect changes in lighting classification and enhancement of aiming instructions which resulted from the walkdown.

Walkdown Results:

Summary:

Areas in the Auxiliary, Control, Communications Corridor, and Turbine buildings and the ESW pump house were identified where the emergency light classification was incorrect. This condition was expected due to the change in scope of the required lighting as documented in the root cause. Except as described below the emergency lighting the areas evaluated provide adequate illumination.

Seven Emergency lights failed to operate or the battery went dead during the test which took approximately one hour in each area. Action Request's (AR) have been initiated for all applications. Building watches have flashlights. Of the 175 lights that were inspected the failure rate was approximately 4%.

Seven areas were identified where there was inadequate "as-left" fire protection emergency lighting.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	6 OF 12

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

Lighting Reclassification:

Emergency lighting at WCNOG is divided into three classifications, NNSR, seismic II/I, and USAR. NNSR emergency lighting is located in non-safety related structures and provides for personnel access and egress. Seismic II/I lighting is located in safety related structures and provides for personnel access and egress. The USAR emergency lighting is located in safety-related structures and is the emergency lighting installed to meet 8 hour emergency lighting required by the Fire Protection Program. All lighting in safety related structures is a Teledyne brand emergency light unit.

As identified in NRC Violation 95-19, the USAR light classification should have also included those emergency light units in areas where operator actions are required and access and egress to those areas.

Based on the increased scope of USAR lighting, as expected, many light units were identified which have been classified as seismic II/I which will be reclassified to USAR. Exact numbers of light units being reclassified are not available as the official engineering evaluation which will update the design documentation is not complete. This activity will be completed by December 15, 1995.

The classification of the emergency light unit determines the level of maintenance and testing the unit receives. All emergency lighting units in the power-block are tested quarterly by utilizing a 90 second functionality check which ensures basic unit operation. The inspection also addresses items such as AC input line voltage, charging float voltage, indicating lights, battery fluid level, lamp verification, and aiming as necessary. An annual test is also performed on each unit.

The USAR lights are illuminated for 8 hours to ensure that they meet the definition of 9.5.3.2.3 of the USAR. A check to ensure that the lamps are aimed properly is also performed during the annual test.

All other Teledyne Brand emergency lighting units, which are classified as seismic II/I or NNSR, are illuminated for 2 hours. All Exide Brand light units, which are classified as NNSR, are illuminated for 1.5 hours.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station	05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	7 OF 12
		95	005	00	

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

Failed Emergency Lighting:

The failed emergency light units and their status are listed below:

<u>Light Unit</u>	<u>Classification</u>	<u>Status</u>	<u>Work Performed</u>
A-80	Seismic II/I	Work Completed	Replaced Battery
A-50	USAR	Work Completed	Replaced Battery
E-3	Seismic II/I	Work Completed	Replaced Battery
T-36	NNSR	Work Completed	Loose Connection
T-3	NNSR	Work Completed	Replaced Battery
T-4	NNSR	Work Completed	Replaced Battery
A-10	USAR	Work Completed	Replaced Battery

The above lighting classification reflects the existing plant program. These classifications may be changed as a result of the engineering evaluation.

During the walkdown approximately 175 light units were inspected. The seven light unit failures represent a failure rate of approximately 4%. Based on work performed, six of the seven emergency light failures were due to battery failures.

Areas With Deficient Emergency Lighting:

The following eleven plant areas were identified as having deficient "as left" emergency lighting:

1. BGV8483A, 1974 Aux., no lights in room.
2. PG1903 panel, 2000 Auxiliary Building, not sufficient lighting.
3. Emergency Locker, 2000 Turbine, not sufficient lighting.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	8 OF 12

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

4. ABV018,7, Area 5, E light unit A-80 failed to function.
5. NGO2B, 2026 Auxiliary Building, not sufficient lighting.
6. EFHV52, 54, 60, 2026 Auxiliary Building, E light unit A-50 failed to function.
7. EFHV38,26,39, 1974 Control, not sufficient lighting.
8. CHFV001, 2000 turbine, not sufficient lighting
9. NG06E, ESW pump house, E light unit E-3 failed to function.
10. ALHV30, 1988 Auxiliary Building, not sufficient lighting.
11. Fuel Pool Level Indicator, not sufficient lighting.

Action Request 8690 has been initiated to formally document and evaluate all of the above areas.

The three areas where lighting units failed, items 4, 6, and 9, will have adequate emergency lighting when the light units are repaired. The failed light units were re-aimed as necessary during the walkdown activity.

An initial assessment of the remaining eight areas indicates the following:

1. BGV8483A - This valve was added to OFN RP-017 as a "good Operator practice". Failure to close the valve would not result in an adverse impact during WCNO's response to a fire in the Control Room.
2. PG1903 - This is the breaker for the Positive Displacement Pump. It is used in Attachment F of OFN RP-017, Actions To Protect Train A Equipment. This attachment is performed only if extra manpower is available. It attempts to secure equipment that may be running without cooling. It is an economic issue and has no affect on safe shutdown.
3. The emergency locker will be relocated to a point where adequate lighting exists.
5. NG02B (HF3 + HR2) - These breakers have jumpers installed per OFN RP-017. The walkdown indicated that the lighting is not adequate for installing the jumpers.

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TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Wolf Creek Generating Station	05000482	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	9 OF 12
		95	005	00	

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

7. EFHV38,26,39 - Operator action for these valves is required for EMG C-0. No operator actions are required for OFN RP-017. Operators are allowed to use supplemental lighting (i.e., flashlights) when responding to EMG C-0.
8. CHFV001 - This valve appears in the Response Not Obtained (RNO) column as the second backup method for ensuring the turbine is tripped. If off-site power is lost (which is the only time that emergency lighting would be needed), then the turbine should already be tripped and the RNO will not be used.
10. ALHV30 - A operator must manually open this valve. This valve is an OFN RP-017 Phase F action, and phase F actions are performed as part of the longest time interval of 7 hours into the procedure actions.
11. Verification of the spent fuel level is an action required by EMG C-0, and OFN NB-034 for loss of all AC actions. Fuel pool level can be verified by alternate means using a flashlight. Sufficient access and egress lighting was available in the pool area.

As stated above, a formal evaluation will be documented, through WCNOG's corrective action programs, for each of the eleven areas.

Root Cause and Corrective Actions:

Root Cause:

WCNOG documented its position on providing emergency lighting, based on the applicable regulatory requirements and guidance, in its Safety Analysis Report. This position included the placement of emergency lighting in all areas permanently manned during an emergency and in all emergency access and egress routes. The NRC stated its understanding on WCNOG's position on emergency lighting by issuing the WCNOG SER (NUREG-0881). NUREG-0881 states that WCNOG has installed emergency lighting in all areas needed for operation of safe shutdown equipment.

WCNOG Facility Operating License Condition 2.C(5)(a) states in part WCNOG shall maintain in effect all provisions of the approved fire protection program as described in the SNUPPS Final Safety Analysis Report for the facility through Revision 17, the Wolf Creek site addendum through Revision 15, and as approved in the SER through Supplement 5.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	10 OF 12

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

The statements in the Facility Operating License and in NUREG-0881 added the requirement for additional emergency lighting not previously committed to or installed by WCNOG.

WCNOG personnel, at the time WCNOG's emergency lighting program was established, did not recognize that emergency lighting in only manned areas was not sufficient to comply with the Facility Operating License or the SER; nor was this discrepancy discovered by subsequent reviews and inspections. Therefore, the WCNOG emergency lighting requirements, as set forth in the Safety Analysis Report, were not revised to reflect the additional requirements delineated in NUREG-0881.

The root cause of this violation is cognitive personnel error in failing to identify the establishment of the additional emergency lighting requirements and failing to assure the necessary program and procedures were in place to implement the requirements.

Contributing Factors:

None.

Corrective Actions:

Immediate:

The Manager Operations, as an interim corrective action, directed the issuance of a memorandum to all shift supervisors and supervising operators directing them to ensure that the turbine building and auxiliary building watches carry operable flashlights. In addition, the turnover sheets for the turbine building and auxiliary building watches states that building watches shall carry operable flashlights when on shift. These actions will remain in place until adequate lighting has been verified in all areas of the plant where operator action is required upon evacuation of the control room.

In an effort to immediately substantiate and quantify the magnitude of the concern, Operations conducted a plant walkdown, on July 19, 1995, using procedure OFN RP-017, Revision 4, "Control Room Evacuation." This "Quick-Look" walkdown was performed by a licensed reactor operator to determine if adequate illumination existed to perform the actions required by the procedure. The walkdown was performed using normal lighting. All areas, with two minor exceptions, appeared to have satisfactory illumination. Based on the walkdown, the licensed operator initially determined that the operator actions required by procedure OFN RP-017 could be accomplished.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Wolf Creek Generating Station	05000482	95	005	00	11 OF 12

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

To confirm the accuracy of the initial walkdown, personnel from Operations and Engineering were directed to perform a second walkdown. This walkdown was conducted using an approved test procedure, with the normal and standby lighting turned off, as specified in the NUREG, to ensure the operator actions required by procedure OFN RP-017 could be performed under worst case scenario conditions for lighting. The intent of the walkdown was to document that needed emergency lighting was correctly installed, to optimize the aiming of the installed emergency lights, and to ensure the emergency lights adequately illuminated the areas where operator actions were required by procedure OFN RP-017. The walkdown was completed on September 1, 1995. A discussion of this walkdown is contained in this LER, starting on page 3.

Long-term:

System Engineering will review corrective work history to determine if repetitive or premature failures of USAR emergency lighting units have occurred. This evaluation will include the light units which failed during the walkdown. An evaluation will then be conducted to determine if enhancements to the maintenance program for USAR emergency light units are needed.

Engineering will identify and classify as USAR all emergency lighting required to meet the Fire Protection Program requirements.

Engineering will evaluate the inadequate lighting levels in all eleven areas which were identified during the walkdown.

Engineering will revise the E-1L drawings to include applicable aiming requirements for the emergency lighting units which were developed during the walkdown.

Licensing will initiate USAR changes so that the SER and USAR commitments requiring emergency lighting are consistent.

Maintenance planning will revise procedure MPE BA-010, "Preventive Maintenance On Teledyne Emergency Lighting," to incorporate:

- The E-1L electrical drawing aiming requirements.
- The emergency lighting aiming requirements identified during this review process.
- The new lights installed to correct areas where emergency lighting was determined to be deficient.
- The emergency lights which were reclassified based on the walkdown results.

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	005	00	12 OF 12

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

- Any other recommended enhancements to the maintenance activities which result from the evaluations of the light unit failures.

The scaffolding program will be enhanced to reflect changes to the E-1L electrical drawings.

Electrical Maintenance, Operations, and Integrated Plant Scheduling will evaluate the need to establish a method to ensure USAR emergency light units, which have corrective work initiated against them, are returned to operating status in a timely manner, and compensatory measures are established as needed.

These activities will be completed by December 15, 1995.

Safety Significance:

The failure to meet the requirements of the WCNOG SER for emergency lighting within the Fire Protection Program, although not desirable, did not result in a condition which would or could have prevented the operators from safely shutting down the plant from outside the Control Room. WCNOG has had and continues to have alternate lighting devices (flashlights and miner cap lights) readily available in emergency lockers for the operators use. Public health and safety was and will be assured.

Other Previous Occurrences:

None.