

Indian Point 3
Nuclear Power Plant
P.O. Box 215
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L. M. Hill
Resident Manager

July 21, 1994
IPN-94-092

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

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 93-055-01
"Inadequate 10 CFR 50, Appendix R Emergency Lighting Due to
Design Deficiency Places the Plant Outside Its Design Basis"

Dear Sir:

The attached Licensee Event Report (LER) 93-055-01 is hereby submitted as required by 10CFR50.73. This event is of the type defined in 10CFR50.73(a)(2)(ii)(B). The supplement reports an event evaluated in the extent of condition. Also attached is the commitment made by the Authority in this LER.

Very truly yours,

A handwritten signature in black ink, appearing to read 'L. M. Hill'.

L. M. Hill
Resident Manager
Indian Point 3 Nuclear Power Plant

LMH/vjm

cc: See next page

9407260133 940721
PDR ADDCK 05000286
S PDR

Handwritten initials in the bottom right corner, possibly 'JE' or similar.

cc: Mr. Thomas T. Martin
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

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700 Galleria Parkway
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U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

Attachment 1
List of Commitments

Number	Commitment	Due
IPN-94-092-01	Site Engineering will replace the three 90 minute lights in the Standby Gas Turbine Substation cubicle with 8-hour battery powered emergency lighting units.	Prior to startup

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 (MNB 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.

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TITLE (4) Inadequate 10 CFR 50, Appendix R Emergency Lighting Due to Design Deficiency Places the Plant Outside Its Design Basis

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 NAME	DOCKET NUMBER
12	27	93	93	-- 055 --	01	07	21	94	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
POWER LEVEL (10) 000	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)			(Specify in Abstract below and in Text, NRC Form 366A)	
	20.405(a)(1)(iv)			<input checked="" type="checkbox"/> 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)					

Name Roger Lauricella, Fire Protection Engineer	TELEPHONE NUMBER (Include Area Code) (914) 736-8334
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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

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).				NO <input checked="" type="checkbox"/>				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 27, 1993, with the plant in cold shutdown, a reactor operator identified that there was insufficient emergency lighting to perform safe shutdown functions in two plant areas. Due to this condition, Indian Point 3 is outside its design basis based on the requirements of 10 CFR 50, Appendix R, Section III.J. The operator identified insufficient lighting to illuminate the 6.9 KV switchgear area on the 15 foot elevation of the Turbine Building and the turbine front stand on the 55 foot elevation of the Turbine Building. This event was caused by personnel error during the preparation of the original modification which installed the emergency battery lights. Corrective actions include revising the Modification Control Manual to more clearly specify testing requirements, developing a modification to correct the lighting deficiencies, completing the engineering acceptance test which identified this concern, and completing an area blackout test for manual operator actions required when the shutdown is conducted from the control room. The supplement to the LER is to report an additional deviation identified while performing the engineering acceptance test.

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DESCRIPTION OF EVENT

On December 27, 1993, at approximately 2300 hours, with the plant in cold shutdown (reactor power level at 7 cps, reactor coolant temperature at 107 degrees Fahrenheit, reactor coolant pressure at atmospheric and the pressurizer level at 25%), a reactor operator identified that there was insufficient emergency lighting to illuminate the 6.9 KV switchgear area on the 15 foot elevation of the Turbine Building (NM) (Appendix R Emergency Battery Lighting Unit EBR-46-TB) and the turbine front stand on the 55 foot elevation of the Turbine Building (EBR-38-TB). The reactor operator made this discovery during the performance of Engineering Acceptance Test ENG-533, Revision 1, "Appendix R Emergency Battery Lighting Area Blackout Test Procedure". The ENG serves to verify the adequacy of 10 CFR 50, Appendix R emergency lighting utilized during an alternative shutdown fire scenario which requires evacuation of the Control Room. Upon determination of the lighting inadequacies Deviation Event Report DER 93-888 was initiated on December 27, 1993.

Off Normal Operating Procedure ONOP-FP-1A, Revision 8, "Safe Shutdown From Outside the Control Room" identifies instructions for locally operated equipment required to achieve and maintain hot shutdown in the event a fire prevents control of this equipment from the Central Control Room (CCR) or if the CCR becomes inaccessible. At the 6.9 KV switchgear (SWGR) enclosure, the operator must manually isolate normal 6.9 KV feeds to the 6.9 KV switchgear and align the Appendix R diesel generator (GEN) to the 6.9 KV safe shutdown bus. At the turbine stand on the 55 foot elevation of the Turbine Building, the operator must trip the main turbine or verify it is already tripped.

The emergency lights are required in accordance with 10 CFR 50, Appendix R, Section III.J which states, "Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto."

As part of the programmatic effort to assess battery powered emergency lighting initiated June 28, 1993, an open item was issued on September 24, 1993, by Configuration Management to track a design document open item (i.e., the battery capacities for three battery powered emergency lighting units within the three Standby Gas Turbine (TRB) Substation (SGTS) cubicles were inadequate to meet the requirements of Section III.J). At the time, inadequate documentation resulted in uncertainty

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on the design basis for the 90 minute lights that were installed. This item was analyzed, found to have minimal safety significance and scheduled to be reviewed and field verified during the preparation of ENG-533 for the yard area. On June 21, 1994 a Fire and Safety Department (FSD) Engineer initiated Deviation Event Report 94-504 to identify open item as a violation of 10 CFR 50, Appendix R.

The requirements of Section III.J apply because the three SGTS cubicles are areas which require manual action to operate safe shutdown equipment. ONOP-FP-1A, Revision 8, identifies locally operated equipment in the SGTS cubicles (i.e., 6.9 kv bus (BU) breaker (BKR) manipulations are necessary prior to aligning the Appendix R diesel generator) required to achieve and maintain hot shutdown in the event a fire prevents control from the CCR.

The FSD reviewed the 1985 modification which added battery powered emergency lights and found the three lights in the SGTS cubicles were added by an engineering change notice (ECN) which was approved after issuance of the Nuclear Safety Evaluation, the modification procedure, the purchase order and the work request for the original eighteen battery powered emergency lights. No work request to install the three lights was found so the reason could not be determined for installing lights designed to the requirements of the Life Safety Code rather than the eight hour requirements of Section III.J. The FSD review considered the most probable cause of the event to be inattention to detail during the installation process. The failure to promptly identify the error was due to the lack of an adequate modification closeout process.

No immediate corrective action was taken because the plant is currently in cold shutdown. This event has existed since the original installation of the lighting, a total of nine years.

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CAUSE OF EVENT

The initial event was caused by personnel error in that two modifications (MOD 85-03-077 FP and MOD 86-03-089 FP) should have identified that the 10 CFR 50, Appendix R lights must be tested in a blackout condition. Testing in the blackout condition is required to verify that the operator can perform the actions required to achieve 10 CFR 50, Appendix R alternate safe shutdown and that adequate lighting is available for access and egress during the performance of these actions. The subject areas were identified as requiring emergency lighting units but the modification that installed these lights did not accurately test the areas to ensure the lighting was sufficient to accomplish the required task.

The use of three ninety minute lights rather than eight-hour lights was caused by personnel error, inattention to detail, when installing battery powered emergency lighting to implement the criteria of 10 CFR 50, Appendix R, Section III.J.

CORRECTIVE ACTIONS

Corrective action IPN-93-137-04, taken in LER 93-042-00, will serve to revise the Modification Control Manual (MCM) to require that modifications identify the safety function(s) of the equipment being worked on and that post-modification testing identified in the modification verifies the function(s). This MCM revision is scheduled to be completed prior to startup. The MCMs which are in effect, together with the revision identified above, will assure that appropriate testing requirements are identified in modifications.

The following corrective actions are planned to address the emergency lighting deficiencies identified:

1. Analyze the areas of concern and develop a modification package to change existing lighting and/or install new emergency lighting to correct the inadequacies prior to startup. This modification will retest the subject areas to determine that the newly modified installed lighting units adequately illuminate safe shutdown equipment which requires manual operator actions.
2. Complete the area blackout test ENG-533 to ensure that all other operator actions (and access/egress paths) required for alternate shutdown are adequately illuminated prior to startup.

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3. Complete an area blackout test, prior to startup, for any manual operator actions outside the control room which would be required for normal control room shutdown as a result of plant fires.

These actions noted above will address the current lighting deficiencies and review the existing configuration for any other inadequacies. If additional deficiencies are found as a result of the corrective actions, a supplement to this LER will be submitted.

The following additional actions have been or will be performed to provide corrective action and prevent recurrence of the type of event reported in the LER supplement:

1. Site Engineering will replace the three 90 minute lights in the Standby Gas Turbine Substation cubicle with 8-hour battery powered emergency lighting units. This modification will be completed prior to startup.
2. The Authority's Modification Control Manual (MCM) program and Engineering Standards will assure future modifications comply with Appendix R requirements. The battery powered emergency lighting required to meet 10 CFR 50, Appendix R, Section III.J will be documented in ENG-533 (see above corrective action 2). The current requirements of the MCM assure that a modification is not closed out until it is complete and verified by testing.

ANALYSIS OF EVENT

The event is reportable pursuant to 10 CFR 50.73 (a)(2)(ii)(B), the licensee shall report any event or condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

The initial event is reportable because the lighting for the actions stated in the event description is inadequate to accomplish the alternate safe shutdown actions in accordance with 10 CFR 50, Appendix R, Section III.J. The lighting has been inadequate for the two areas since the initial installation of the subject emergency battery lights (FH)(LF) by modification MOD 85-03-077 FP which was declared operable on October 3, 1985. The lighting in the area of the 6.9 KV switchgear will require repositioning existing lamps and/or adding additional battery lighting units.

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The supplement describing the capacity of the three lighting units in the SGTS cubicles is reportable because the lights have not been in accordance with the design requirements of 10 CFR 50, Appendix R, Section III.J since initial installation in 1985.

A similar event reported in Licensee Event Report LER 93-007-00 identified that two operator egress pathways had been without the 8-hour lighting units required by 10 CFR 50, Appendix R, Section III.J. LER 93-042-00 was also similar in that it identified inadequate design testing specified in an engineering design document. Other events where an error in the modification process resulted in a failure to meet 10 CFR 50, Appendix R or other fire protection criteria have been reported in LERs 92-10, 92-17, 93-18, 93-29, 93-37, 93-38, 93-41 and 93-51.

SAFETY SIGNIFICANCE

This event did not affect the health and safety of the public.

The existing 10 CFR 50, Appendix R emergency battery lighting is not sufficient to provide proper illumination to execute the alternate safe shutdown actions at the 6.9 KV switchgear area and the turbine stand in accordance with the testing criteria established in ENG-533. Utilizing the testing criteria, the performance of the required manual operator actions at the 6.9 KV switchgear and the turbine front stand would have been impeded due to insufficient illumination levels. ENG-533 testing conditions do not allow for any lighting sources other than the emergency battery lights installed for 10 CFR 50, Appendix R purposes. The plant is currently in a cold shutdown condition; therefore, the current lighting inadequacies for this plant condition have no impact on safety. However, this condition has existed since modification MOD-85-03-077 FP was declared operable on October 3, 1985.

This event during power operations would have had no impact on the health and safety of the public. During an actual event at power the operators are procedurally equipped with flashlights (ONOP-FP-1A step 2.1) which will aid in illuminating those areas where alternate safe

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shutdown actions are to be performed. In addition to the standard flashlights, there are two 8 hour hand held lighting units located in the Appendix R locker and three 8 hour hand held lighting units located in the shift supervisor's office. The availability of the flashlights in conjunction with the existing emergency battery lighting would have allowed the operator to perform the intended actions.

The three existing battery powered emergency lights in the SGTS cubicles each have a 90 minute capacity. The Appendix R reevaluation timeline sent to the Nuclear Regulatory Commission in 1984 (by letter IPN-84-32) identifies the alignment of the Appendix R diesel generator to 480v switchgear 312A within fifteen minutes. This alignment includes local action required in the SGTS cubicles. Since the SGTS cubicle lighting units are sufficient for 90 minutes, it is reasonable to expect that all required actions would have been performed while the lights were available. In addition, plant operators could have utilized eight-hour portable hand held lighting units.

The extent of condition for this event is being addressed by the corrective action which involves the completion of ENG-533. Completion of this ENG will serve to ensure that all other operator actions (and access/egress paths) required for alternate safe shutdown are adequately illuminated.