NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oyster Creek, Unit 1	0 5 0 0 0 2 1 9	1 OF 0 4

TITLE (4)
REFUELING BRIDGE POSITION LIMIT SWITCH FAILURE DUE TO INSTALLATION DEFICIENCY DISCOVERED DURING REFUELING OPERATIONS

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)
0 6	2 6	8 6	8 6	0 1 5	0 2	0 3	1 9	8 7		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

	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 (Specify in Abstract below and in Text, NRC Form 366A)
	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	TELEPHONE NUMBER (AREA CODE)
Lynne W. Leitman, Operations Engineer	6 0 9 9 7 1 - 4 3 8 9

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	D F	3 3	G 0 8 0	N					

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)

During refueling operations on April 30, 1986 at 0920 hours, it was discovered that a control rod block signal was not received when the refueling bridge (EIIS System Code DF) was over the core with the grapple loaded and not fully raised. Refueling operations were halted and the problem was investigated. A position limit switch (EIIS Component Code 33) on the refueling bridge was found broken and failed in the non-conservative (closed) position. This created the potential for control rod drive movement with the refueling bridge over the core. The switch was replaced and returned to service at 1030 hours on April 30, 1986. The event was not determined to be reportable until June 26, 1986 when the completed job was in the review process. The switch failed again during refueling operations on August 15, 1986 at 1440 hours, August 28, 1986 at 1536 hours and August 29, 1986 at 0718 hours. The apparent cause of the occurrence was a protruding bolt on the limit switch actuating plate which damaged the switch during refueling bridge movement. The safety significance of this event is considered minimal because the control rod block refueling interlock is confirmed by plant procedures and the interlock failure was detected in a short time. Immediate corrective actions were taken to shorten the protruding bolt and repair the switch. Further corrective actions will be taken to make the switch less susceptible to physical damage.

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DATE OF OCCURRENCE

The condition occurred on April 30, 1986 at 0920 hours but was not determined reportable until June 26, 1986 at approximately 1630 hours.

The condition occurred again on August 15, 1986 at 1440 hours, August 28, 1986 at 1536 hours and August 29, 1986 at 0718 hours.

IDENTIFICATION OF OCCURRENCE

The refueling bridge position limit switch (EIIS System Code DF, Component Code 33) which is an input to the refueling interlocks failed in the non-conservative (closed) position which created the potential for control rod drive movement with the refueling bridge over the core.

This event is considered reportable under 10 CFR 50.73(a)(2)(i)(B).

CONDITIONS PRIOR TO OCCURRENCE

The reactor mode switch was in REFUEL and defueling operations were in progress on April 30, 1986. The reactor mode switch was in REFUEL and refueling operations were in progress on August 15, 28 and 29, 1986.

DESCRIPTION OF OCCURRENCE

On April 30, 1986 at 0920 hours, it was noted by a Group Shift Supervisor (GSS) during defueling operations that a control rod withdrawal block signal was not received when the refueling bridge was over the core with the grapple loaded and down. This control rod block function had been tested successfully at 0840 hours on the same day. Defueling operations were terminated immediately, and the GSS wrote a job order to investigate and repair the problem. Electricians were dispatched to the refueling bridge position limit switch which should have activated the control rod block, and the switch was found twisted and broken. The switch was replaced and the control rod block function was tested satisfactorily on April 30, 1986 at 1030 hours. Defueling operations were resumed at approximately 1400 hours. This event was not determined to be reportable, however, until the job order was in the post-completion review process.

During refueling operations on August 28, 1986 at 1536 hours, a fuel assembly was being moved from the spent fuel pool (EIIS System Code DA) to the reactor cavity. When the refueling bridge passed from the fuel pool to the reactor cavity, it was noted by refueling personnel that the control rod block was not activated by the refueling bridge position limit switch as it should have been. The fuel assembly was returned to the fuel pool and refueling operations were suspended until the refueling bridge position limit switch was repaired. The same sequence of events occurred on August 29, 1986 at 0718 hours.

On February 24, 1987 plant personnel discovered another similar event during the review of a completed job order. During refueling operations on August 15, 1986 the refueling bridge position limit switch was noted not to be operating properly at 1440 hours. Refueling operations were terminated while the switch was replaced and were resumed after the switch was tested satisfactorily at 1910 hours.

APPARENT CAUSE OF OCCURRENCE

The apparent cause of the occurrence was a protruding bolt on the switch activating plate mounted on the floor. The bolt apparently hit the limit switch roller when the refueling bridge moved from the fuel pool to the reactor cavity which mispositioned the roller. When the bridge returned to the fuel pool, the roller impacted on the protruding bolt before reaching the plate itself. This further mispositioned the roller and caused it to hit the plate at the wrong place thus damaging the roller and switch. This cause was not determined until the switch failure on August 29, 1986. Previous failures had been attributed to personnel error or damage from equipment stored nearby.

It was also found during investigation of the switch failures that the limit switch is susceptible to physical damage by workers and by personnel accessing or passing near the bridge. The switch is located on the outside of the refueling bridge and is not physically protected. Accidental mispositioning by passing personnel may have contributed to switch failure on one occasion.

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT

During refueling activities, addition of large amounts of reactivity to the core is prevented by operating procedures. These controls are backed up by refueling interlocks on rod withdrawal and movement of the refueling platform. When the reactor mode switch is in the REFUEL position, the refueling interlocks are in effect to prevent the refueling platform from being moved over the core if a control rod is withdrawn and fuel is on a hoist. In addition, if the refueling platform is over the core with fuel on a hoist, control rod withdrawal is prevented by the interlocks (control rod block).

The failure of refueling interlock limit switch #1 and the resultant absence of the rod block function created the potential for control rod movement with the refueling bridge over the core. The refueling interlocks, however, are intended only as a backup for plant operating procedures. Plant Technical Specifications require that the refueling interlocks be tested prior to any fuel handling (with the head off the reactor vessel), and at weekly intervals thereafter until no longer required and following any repair work associated with the interlocks. The refueling bridge procedure (Procedure 205.62) requires a checkoff to be performed prior to starting fuel handling at the beginning of each shift for material and operational condition of the refueling bridge. This checklist includes a

functional test of the control rod block function when the bridge is over the core with the grapple down, by actually attempting to withdraw a control rod one notch. Procedure 205.62 also includes a verification that the refueling interlock circuit surveillance has been performed within the past week. The refueling interlock circuit surveillance tests each individual component of the refueling interlock for proper operation. During defueling and refueling operations, a control room operator is also required to monitor proper operation of the refueling interlocks, which in all cases was the means of identification of the switch failures.

The safety significance of this event is considered minimal since the proper procedures were in place to detect, within a short period of time, the failure of the control rod block refueling interlock. The greatest length of time the refueling interlock could have been inoperable is 40 minutes on April 30, 30 minutes on August 15, 72 minutes on August 28 and 16 minutes on August 29, 1986.

CORRECTIVE ACTIONS

Immediate corrective actions were taken on each occasion to repair refueling interlock limit switch #1 and to verify its operability. On August 28 and August 29, 1986, the fuel being moved when the switch failures occurred was immediately returned to the fuel pool until switch repair was completed. When the protruding bolt was discovered after the switch failure on August 29, the bolt was shortened to preclude recurrence of the event.

In order to prevent personnel from accidentally mispositioning the switch, a protective plate will be installed around the switch. This modification will be done during Cycle 11.

In addition, this LER will be made required reading for operations and maintenance personnel in order to stress the importance of avoiding switch damage when working near any safety device.

(0202A)

GPU Nuclear

GPU Nuclear Corporation
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Writer's Direct Dial Number:

March 19, 1987

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

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Licensee Event Report Revision

This letter forwards one (1) copy of Licensee Event Report (LER) No. 86-015, Revision 2. Vertical lines in the right side margin indicate those sections of the LER that have been revised.

Very truly yours,

Peter B. Fiedler
Vice President and Director
Oyster Creek

PBF:MH:dam (#0218A)
Encs.

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