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C321-94-2064
May 20, 1994

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

Dear Sir:

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

This letter forwards one (1) copy of Licensee Event Report 94-004.

Should you have any questions, please contact Mr. David Distel at (201) 316-7955.

Very truly yours,

John J. Barton
Vice President and Director
Oyster Creek

JJB/DJD/plp
Enclosure

cc: Administrator, Region I
Senior NRC Resident Inspector
Oyster Creek NRC Project Manager

IE22

NRC FORM 366N
(5-92)

LICENSEE EVENT REPORT (LER)

U. S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oyster Creek, Unit 1	05000219	1 OF 4

TITLE (4)
Isolation Condenser Valve Closure Times Could Exceed Design Requirement

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
04	22	94	94	004	0	05	20	94	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
POWER LEVEL (10)			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)	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)
Sylvain Schwartz, Engineer	609-971-4558

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).	X	NO				

ABSTRACT (16))

Calculations performed as part of the Generic Letter 89-10 Motor-Operated Valve (MOV) Program for the Isolation Condenser System (ICS) DC-powered isolation valves determined that the voltage available at the motor operator combined with the dynamic blowdown conditions existing during ICS high energy line break (HELB) isolation would produce valve closure times greater than the design condition of 60 seconds identified in the Final Safety Analysis Report (FSAR) Section 6.3.2.5 and Table 6.2-12. The root cause of this condition was the reevaluation of the design capabilities of the motor-operated valves as a result of the Generic Letter 89-10 program recommendations.

The safety significance is considered to be minimal since the calculated valve stroke times for the subject valves meet the design criteria for establishing isolation times for high energy line breaks (HELB). These criteria are defined in Oyster Creek Technical Specification Section 4.5 Basis and Oyster Creek FSAR Section 6.3.2.5.

The 60 second isolation design time requirement in the FSAR will be revised for these valves, in conjunction with the results of the ongoing Oyster Creek Generic Letter 89-10 MOV Program.

DATE OF DISCOVERY

The condition described in this report was identified on April 22, 1994.

IDENTIFICATION OF DISCOVERY

Conditions (voltages and differential pressure) at the DC-powered Isolation Condenser System (ICS) (EIIS-BL) isolation valves (CFI-ISV) V-14-31, 33, 34, and 35 could result in longer valve stroke times such that isolation of ICS high energy line breaks (HELBs) under worst case postulated design basis conditions would exceed the Final Safety Analysis Report (FSAR) requirement of 60 seconds. This condition is considered to be reportable in accordance with 10 CFR 50.73 (a)(2)(ii).

CONDITION PRIOR TO DISCOVERY

At the time of discovery, the plant was operating at approximately full power. Both Isolation Condenser Systems (ICS) were operable. The condition has been present throughout the plant's operating history since implementation of the ICS high flow isolation signal time delay in the 1973 timeframe.

DESCRIPTION OF OCCURRENCE

The Isolation Condenser System (ICS) is a standby, high pressure system for removal of fission product decay heat when the reactor vessel is isolated from the main condenser. The ICS operates by natural circulation without the need for driving power other than the DC electrical system used to place the ICS in operation. The system operates with steam flowing from the reactor pressure vessel through the condenser tubes and condensate returning by gravity to the reactor pressure vessel, forming a closed loop. The Isolation Condensers are automatically isolated from the reactor vessel in the event of high flow in either the steam or condensate lines which results from a line break. One AC-powered and one DC-powered isolation valve is provided in each of the steam and condensate return lines for each Isolation Condenser.

DESCRIPTION OF OCCURRENCE (cont)

The ICS DC-powered isolation valve stroke times could result in high energy line break (HELB) isolation times which exceed the 60 second design requirement identified in Final Safety Analysis Report (FSAR) Section 6.3.2.5 and Table 6.2-12. This discovery was identified during finalization of electrical voltage drop calculations for the DC motor-operated valves in the Generic Letter 89-10 Motor-Operated Valve (MOV) Program. This evaluation considered the slowdown of the DC motors under worst case postulated design basis conditions, which produced a maximum valve stroke time of 37 seconds (V-14-33 and 35) at battery float voltage, and a maximum valve stroke time of 42.5 seconds (V-14-31) at end-of-life battery voltage. Adding the existing high flow isolation signal time delay (maximum 39 seconds) to these calculated valve stroke times results in corresponding total isolation times of 76 and 81.5 seconds. This condition applies to DC-powered valves V-14-31 and V-14-34 in Isolation Condenser A, and V-14-33 and V-14-35 in Isolation Condenser B.

The effects of torque and voltage on DC motor speed had not previously been addressed. Additionally, the original valve design requirements underpredicted the dynamic conditions on these valves under blowdown conditions during closure following a HELB in the ICS. The Generic Letter 89-10 MOV Program calculations consider higher valve factors, stem friction coefficients, and the effects of DC motor RPM decreasing as the torque load is increased and voltage is degraded, when closing against differential pressure.

The isolation valve closure time design criteria for an ICS HELB is established to ensure that the offsite dose consequences and adequate core cooling requirements are bounded by the main steam line break and design basis loss-of-coolant accident (LOCA) respectively (reference Oyster Creek Technical Specification Section 4.5 and Oyster Creek Final Safety Analysis Report 6.3.2.5). As part of the design criteria, equipment required to minimize offsite release and ensure adequate core cooling are qualified to the HELB environmental profiles and flooding effects. Previous evaluation has shown that the longer valve stroke times (76 and 81.5 seconds) are adequate to maintain the above design basis criteria. Therefore, operability of these valves is not affected, and the safety significance of this condition is considered minimal.

APPARENT CAUSE OF OCCURRENCE

The cause of this condition was the reevaluation of design capabilities of the motor-operated valves as a result of the Generic Letter 89-10 program recommendations.

ANALYSIS OF OCCURRENCE AND SAFETY SIGNIFICANCE

Revised calculated valve stroke times could result in a maximum isolation time of 81.5 seconds for the DC-powered Isolation Condenser System (ICS) isolation valves. The original design basis for isolation of ICS high energy line breaks (HELBs) is established to ensure that the offsite dose consequences and adequate core cooling requirements are bounded by the main steam line break and design basis loss-of-coolant accident (LOCA) respectively (reference Oyster Creek Technical Specification Section 4.5 and Oyster Creek Final Safety Analysis Report 6.3.2.5). As part of the design criteria, equipment required to minimize offsite release and ensure adequate core cooling are qualified to the HELB environmental profiles and flooding effects. A conservative evaluation of the effects of the increased valve stroke time demonstrated that a bounding 95 second isolation time for ICS HELBs remains acceptable in terms of the above design basis acceptance criteria. Since the original design basis criteria is preserved, this condition is considered to have minimal safety significance, and operability of these valves is not affected.

Static test data for these valves indicate margin above the required thrust in the closing direction. Additionally, it is noted that each of the associated ICS containment penetrations (CFI-PEN) is provided with redundant AC-powered isolation valves which contain calculated margins based on static test data.

CORRECTIVE ACTIONS

No immediate corrective actions are required since the longer valve stroke times result in acceptable Isolation Condenser System high energy line break isolation times. The 60 second isolation time design requirement in the Final Safety Analysis Report will be revised to describe the longer allowable isolation criteria. This change will be made in conjunction with results of the Oyster Creek Generic Letter 89-10 Motor-Operated Valve Program. Technical Specification 4.5 Basis will also be revised to clarify the isolation time criteria for these valves.

SIMILAR EVENTS

None.