GPU Nuclear

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Writer's Direct Dial Number:

C321-94-2092
June 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 94-006

Enclosed is Licensee Event Report 94-006.

If there are any questions please contact Joseph Andrescavage, Oyster Creek Licensing Engineer at Extension 4862.

for John J. Barton
Vice President and Director
Oyster Creek

JJB/JA:jc
Enclosure
c: Administrator, Region I
Senior Resident Inspector
Oyster Creek NRC Project Manager

IE22

NRC FORM 366M
(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) TECHNICAL SPECIFICATION REQUIRED SHUTDOWN DUE TO BOTH CONTROL ROD DRIVE PUMPS DECLARED INOPERABLE

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
05	23	94	94	006	00	06	20	94	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)											
POWER LEVEL (10)	100		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)		Specify in Abstract below and in Text, NRC Form 366A)				
			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 (Include Area Code)
LYNNE W. SWEEZO, SYSTEM ENGINEER	609-971-4389

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	AA	SHV	V085	Y						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (16))

A technical specification required plant shutdown commenced on May 22, 1994 at 1110 hours when both Control Rod Drive (CRD) Pumps were found to be inoperable during surveillance testing. The plant was placed in cold shutdown at 0639 hours on May 23, 1994. The single discharge stop check valve on CRD pump "B" would not close. This resulted in both pumps failing their operability test.

Valve failure was determined to be valve body erosion which allowed the disc to become lodged between a groove in the body and the valve seat. The safety significance was minimal.

The corrective action taken was to replace the stop check valve on CRD pump "B" with separate check and globe valves. Performance of the new valve configuration will be evaluated during the run cycle.

DATE OF OCCURRENCE

The event occurred on May 22, 1994 at 1005 hours.

IDENTIFICATION OF OCCURRENCE

A plant shutdown required by Technical Specifications was completed due to a failed Control Rod Drive (EIIS-AA) system valve (CFI-SHV) which rendered both pumps inoperable. This is reportable in accordance with 10CFR50.73(a)(2)(i)(A) and (a)(2)(i)(B).

CONDITIONS PRIOR TO OCCURRENCE

The plant was in the RUN mode at approximately 100% power. A Control Rod Drive Pump operability test was in progress.

DESCRIPTION OF OCCURRENCE

On May 22, 1994, at 1005 hours operators began a Control Rod Drive (CRD) pump operability test. CRD Pump B was initially running. When the operator started CRD Pump A then shut down CRD Pump B to take data on CRD Pump A, Control Room indication of CRD flows went to zero and the charging water low pressure alarm annunciated. Operators immediately restarted CRD Pump B. Operators again shut down CRD Pump B with personnel present at the pump and again observed loss of system flow and pressure. The local personnel observed reverse rotation of CRD Pump B. Further attempts to restart CRD Pump B were not successful. CRD Pump B's discharge stop-check valve was manually closed as much as possible and reverse rotation was slowed but not stopped. For a short time (3 1/2 minutes) both CRD pumps were shutdown and an apparent reverse flow of 38 gpm through the B pump was indicated. Operators were able to adjust CRD system pressure to clear the low charging water pressure alarm and to establish sufficient system flow and pressure to provide normal system functions. However, since CRD Pump A did not pass the operability test and CRD Pump B could not be started, both were considered inoperable. Each pump had a single discharge stop-check valve, so the failed valve on CRD Pump B could not be isolated for repair. A plant shutdown was commenced at 1110 hours on May 22. Cold shutdown was reached at 0630 hours on May 23.

APPARENT CAUSE OF OCCURRENCE

The CRD pump discharge valves were normally throttled to maintain CRD charging water header pressure within a specific range. CRD Pump B normally has a significantly higher discharge pressure than CRD Pump A, therefore CRD Pump B's discharge valve required greater throttling. The clearances between valve disc and body were also much narrower for CRD Pump B's discharge valve than in CRD Pump A's discharge valve. These two factors combined to cause erosion of CRD Pump B's discharge valve body. Grooves were worn inside the valve body and the disc became wedged between one of these grooves and the valve seat. The disc was able to become wedged in the body because it was guided by the valve body inner diameter and not the stem.

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT

The Control Rod Drive Hydraulic system provides the means to position control rods for reactivity changes and provides rapid insertion of all control rods into the core to render the reactor subcritical under any abnormal reactor conditions. It is also capable of providing high pressure coolant injection for break sizes up to .002 square feet, although no credit is taken in the plant's safety analysis report (FSAR) for this function. A loss of both Control Rod Drive pumps causes a loss of ability to position control rods for reactivity changes and a loss of a high pressure coolant injection source. The control rods will scram, however, because a check valve at each hydraulic control unit prevents loss of hydraulic control unit pressure which will scram the control rods if necessary. The function of both pumps was lost temporarily (a few minutes). The reverse flow condition observed during this time is postulated to have been caused by scram accumulator water leaking back into the system through charging water stop-check valves. The shutdown was completed with a Control Rod Drive pump operating and supplying water at the appropriate pressure for drive positioning and the scram function if necessary. Therefore, the safety significance of this event is minimal.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oyster Creek, Unit 1	05000219	94	006	00	4 OF 4

CORRECTIVE ACTION

1. The valve which failed was replaced with two valves, a lift check and a globe valve. The same valve on the other pump had its internal parts replaced with a new disc and stem. The new disc is guided by the valve stem.

2. Performance of the new valves will be monitored and evaluated for appropriateness as a long term solution. The remaining stop-check valve, and possibly the new valves, will be replaced with what is determined to be the appropriate configuration.

3. The source of the apparent flow with both pumps shutdown will be evaluated and potential effects will be analyzed.

FAILURE DATA

Manufacturer: Velan Valve Corporation
Model: 2A84B
Operating range: 1610 psig, 400 degrees F

SIMILAR EVENTS

None