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)

EMERGENCY SERVICE WATER PIPE COATING FAILURE

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 5 0 0 0
0 7	2 2	8 5	8 5	— 0 1 8	— 0 0	0 8	2 3	8 5		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
0 7 8		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)	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
Carl Zilla, Plant Engineering	6 0 9 — 9 7 1 1 — 4 1 3 8 6

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				

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

Emergency Service Water (ESW) System II was declared inoperable on July 21, 1985 following a high Containment Spray Heat Exchanger baffle plate differential pressure condition that developed during a system operability test. Performance problems with pumps 52A and 52B of ESW system I during an operability test conducted on July 20 - July 21, 1985 led to a 24 hour test on July 21, 1985 to demonstrate System I ESW pump operability. By the morning of July 22, 1985, System I heat exchanger baffle plate differential pressure had approached its' allowable limit. On July 22, 1985, the decision was made to proceed to cold shutdown since continued operation of System I could not be assured and System II was inoperable.

Examination of the heat exchangers revealed that the inlet tubesheets of the heat exchangers were partially plugged with fragments of coal tar enamel which had been used to coat the inside of the ESW piping for corrosion protection. Subsequent internal pipe examinations revealed that the damaged coating areas which produced the fragments were limited to the discharge piping immediately downstream of the ESW pumps. High pressure water was used to hydrolaze each loop to remove the affected coating and prevent heat exchanger plugging. An operability test was successfully run on both ESW systems and the plant was returned to operation on August 4, 1985.

IE22

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Date of Occurrence

The event was discovered on July 22, 1985.

Identification of Occurrence

ESW System II was declared inoperable on July 21, 1985 due to coal tar fragments plugging the inlet tubesheets of the Containment Spray heat exchangers. In addition, ESW System I was approaching its heat exchanger diffential pressure limit during an extended surveillance run on July 22, 1985 to verify proper ESW pump operation (low discharge pressure). Therefore, the reactor was placed in cold shutdown on July 22, 1985 per Technical Specification 3.4.C.7 and ESW pipe inspection and heat exchanger cleaning commenced.

This event is considered reportable as defined in 10CFR50.73 a.2.v.B.

Conditions Prior to Occurrence

The reactor was in the "RUN" mode and at 78% power (1500 MWt).

Description of Occurrence

During an ESW System II operability test conducted on July 10, 1985, heat exchanger 1-3 baffle plate differential pressure was noted to decrease from 8 psid to 3 psid. System II heat exchangers 1-3 and 1-4 were subsequently opened to determine if baffle plate damage had occurred. Examination of the units revealed that the inlet tubesheets were blocked with fragments of ESW pipe lining material. In addition, the inspection revealed that heat exchanger 1-3 was blocked more extensively than heat exchanger 1-4. The baffle plates, however, showed no signs of damage. Heat exchangers were cleaned on July 19, 1985, and the operability of System II was tested by running the system through the night. On morning of July 20, 1985, heat exchanger 1-3 was opened. Examination of the heat exchanger revealed that significant tubesheet blockage had again occurred. Heat exchanger 1-4 was subsequently opened and inspected. The examination revealed that only a small amount of material was present in the tubesheet. Both heat exchangers were closed and System II was run through Sunday morning (July 21, 1985) until baffle differential pressure reached the operability limit. System II was declared inoperable until the baffle plate differential problem could be resolved.

During the final run of System II, an operability test was conducted on System I. Performance problems with pumps 52A and 52B led to further demonstration of System I operability, consisting of a 24 hour test beginnning on the evening of July 21, 1985. By the next morning (Ju'y 22, 1985), System I baffle plate differential pressure had approached its' limit.

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

A meeting was held on the morning of July 22, 1985 and the decision was made by plant management to shut down the plant, inspect/repair the ESW piping and clean the ESW heat exchangers.

ESW System I heat exchangers 1-1 and 1-2 were opened. The high differential pressure was caused by the presence of an accumulation of material consisting of dead marine debris and fragments of pipe lining material which blocked the inlet tubesheets.

Apparent Cause of Occurrence

The high differential pressure observed in both systems was due primarily to accumulations of pipe lining material fragments blocking the inlet tubesheets. Accumulations of dead marine debris were also found in both systems which contributed to heat exchanger inlet tubesheet blockage. The coating fragments were an ESW internal pipe coating (coal tar), which is postulated to have resulted from coating failure due to repeating thermal cycles of the outdoor exposed portion of the piping while drained during the last refueling outage. The dead marine debris were transported to the heat exchangers during System I and II operability runs.

The accumulation of marine debris in the System I heat exchangers has been attributed to operational problems with the intake structure screen wash system. Screen wash nozzles were clogged and not properly washing debris from the screens and into the troughs. In addition, flappers which are designed to brush remaining debris from the screen into the trough were worn out and allowed debris to be carried over to the pump side of the intake screens.

Analysis of Occurrence and Safety Assessment

The Containment Spray System is provided to remove heat energy from primary Containment in the event of a LOCA. The ESW System provides cooling to the containment spray heat exchangers and is required to provide the ultimate heat sink for the energy release in the event of a loss-of-Coolant Accident. This condition of the Containment Spray heat exchangers substantially reduces the heat removal capability of the Containment Spray System. With limited heat removal from primary containment following a LOCA, the temperature and pressure could increase. In response to high containment pressure, the Emergency Operating Procedures (EOPs) direct the operator to reduce the pressure. The RPV Flooding procedure would direct the operator to use every available pump to inject water into the RPV. The net result would be to begin to flood primary containment. Since the water being injected from the condensate or fire systems is relatively cold and would be heated only by passing through the core as it falls out the

break, it would eventually reduce the temperature of the water in the primary containment and terminate the containment pressurization. The EOPs would also direct the operator to control primary containment pressure by venting. The operator would continue in this mode until primary containment had flooded to the point at which the shutdown cooling system could be used to provide long term decay heat removal or until the Containment Spray Heat Exchangers could be returned to service.

Corrective Action - Immediate

A visual inspection of the pipe internal pipe surface was performed at strategic locations in each ESW system piping run to identify damaged coating areas. The inspection revealed that the extent of coating damage was limited to the piping immediately downstream of the ESW pumps. The section of piping that was shown to have coating damage and heavy barnacle growth was subsequently cleaned by hydrolazing the surface using high pressure water. The coating in the affected areas was removed up to the next mechanical joint (the mechanical joint will provide a barrier against propagation of coating degradation); approximately 50 feet of piping in each system was cleaned. After the hydrolazing was complete, the pipe interior was reinspected and the adequacy of the cleaning operation confirmed.

The potential for further blockage of the heat exchangers has thus been minimized by removal of coating from the areas considered to be affected.

The screen wash nozzles were cleaned and adjusted for proper performance. The flappers were replaced to properly brush debris off the screens and into the troughs. In order to prevent a similar occurrence in the future, the screens and flappers are now examined regularly on operator inspection tours. In addition, the screen wash nozzles and the flappers will now be inspected as part of the plant preventive maintenance program on a monthly basis.

Corrective Action - Future

An engineering evaluation revealed that the plant can safely operate for a number of years with no additional corrective action. The plant will operate while several long term solutions addressing the present condition of the ESW system piping are evaluated.

(0055A)

GPU Nuclear

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Writer's Direct Dial Number:

August 23, 1985

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

This letter forwards one (1) copy of Licensee Event Report (LER) No. 85-018.

Very truly yours,

Peter B. Fiedler
Vice President and Director
Oyster Creek

PBF:dam(0055A)
Enclosures

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