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May 4, 1990
PY-CEI/NRR-1175 L

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

Perry Nuclear Power Plant
Docket No. 50-440
LER 90-005

Dear Sir:

Enclosed is Licensee Event Report 90-005 for the Perry Nuclear Power Plant.

Sincerely,

Michael D. Lyster
Vice President - Nuclear
Perry Nuclear Power Plant

MDL/njc

Enclosure: LER 90-005

cc: T. Colburn
NRC Resident Inspector

U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

IE22
1/1

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	1 OF 0 3

TITLE (4) Fuel Oil Degradation Causes Inoperability of High Pressure Core Spray System

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 4	0 5	9 0	9 0	0 0 5	0 0	0 5	0 4	9 0		0 5 0 0 0
										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)			
1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10): 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	X 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)	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
Henry L. Hegrat, Compliance Engineer, Extension 6855	AREA CODE: 2 1 6 2 5 9 - 3 7 3 7

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
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 6	3 0	9 0

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

At 1259 on April 5, 1990 the High Pressure Core Spray system was declared inoperable in accordance with Technical Specification 3.8.1.1 action d. due to Division III Diesel Generator (DG) fuel oil sediment exceeding Technical Specification limits for over 72 hours. The Division III DG storage tank had been offloaded, inspected, cleaned, refilled with new fuel oil, and tested to ensure operability but all of these actions could not be accomplished within the required 72 hours.

The cause of this event was fuel oil degradation, but the root cause has yet to be determined. Investigation continues to determine the root cause of the event.

To prevent recurrence, site Chemistry personnel are performing an evaluation to determine the cause of the fuel oil degradation. Further corrective actions will be based on this evaluation. Additionally, an engineering evaluation is being performed to determine possible improvements to storage facilities to reduce accumulation of water and contaminants, to provide filtering of the fuel oil from on-site sources, and to enhance maintenance/cleaning of fuel oil storage tanks. A supplemental report will be provided, detailing any additional corrective actions based on the evaluations.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	9 0	— 0 0 5	— 0 0	0 2 OF 0 3

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

At 1259 on April 5, 1990, the High Pressure Core Spray [BG] (HPCS) system was declared inoperable in accordance with Technical Specification 3.8.1.1 action d. At the time of the event,the plant was in Operational Condition 1 (Power Operation) at approximately 100 percent of rated thermal power with the Reactor Pressure Vessel [RPV] at saturated condit ons at approximately 1028 psig.

At 1259 on April 2, 1990, it was discovered that Division III DG fuel oil exceeded Technical Specification 4.8.1.1.2.d.1 with sediment greater than 0.05 percent and Division III DG was declared inoperable. The decision was made to offload the fuel oil in the Division III DG storage tank [TK] and refill with new satisfactorily tested fuel oil. After encountering problems with Vendor offloading equipment, the Division III DG storage tank was offloaded at approximately 0800 on April 4, 1990. An inspection of the tank after it was offloaded revealed that sludge had accumulated on the walls of the tank. It was decided that the tank should be cleaned before refilling with fuel oil and cleaning was completed at approximately 2200 on April 4, 1990. At 0100 on April 5, 1990, refilling of the tank with new fuel oil was commenced and at approximately 1200 on April 5, 1990, the refilling was completed. At 1259 on April 5, 1990, in accordance with Technical Specification 3.8.1.1 action d, with Division III DG inoperable for 72 hours, the HPCS system and Emergency Service Water (ESW) [BI] Loop C were declared inoperable and operators took all required actions. The new fuel oil was additionally filtered for particulates after test samples were taken. Upon receiving satisfactory fuel oil test results, the Division III DG, HPCS, and ESW Loop C were declared operable at 1845 on April 6, 1990. After an evaluation of data from previous surveillance tests, the quality of Division I and II diesel generator fuel oil was determined to be satisfactory for operability. As a precautionary measure, however, the necessary dispersant additives were added to Division II fuel oil and the tank was recirculated and sampled for water and sediment on April 5, 1990. No measureable contamination was discovered. Following the testing, Division II diesel generator fuel oil was also filtered to eliminate any particulate contamination.

The cause of this event was fuel oil degradation, but the root cause has yet to be determined. The fuel stored in the Division III DG storage tank was approximately 1 year old and this sediment problem has not been previously experienced. Investigation continues to determine the root cause of the event.

The Division III Diesel Generator provides power to HPCS and ESW Loop C in the event that the normal off-site power supply is not available. The HPCS system pumps water through a peripheral spray ring sparger mounted above the reactor core. Coolant is supplied over the entire range of system operation pressures. The primary purpose of HPCS is to maintain reactor vessel inventory after small breaks which do not depressurize the reactor vessel. HPCS also provides spray cooling heat transfer during leaks in which core uncovery is calculated. ESW Loop C provides cooling water flow for the Division III Diesel Generator Heat

Exchanger and HPCS Pump Room Cooler. During the period of time the HPCS system was declared inoperable, the Automatic Depressurization System and Low Pressure Core Spray, as well as the Low Pressure Coolant Injection Systems were operable ensuring adequate core cooling as described in Chapter 15 of the Updated Safety Analysis Report. Additionally, although HPCS and ESW Loop C were required to be declared inoperable, the HPCS system was not removed from service and would have automatically initiated if required. Therefore, this event is not considered to be safety significant. A previous event involving DG fuel oil problems was discussed in LER 89-001. In this event, the Division II DG was declared inoperable, due to a high concentration of insolubles in the fuel oil, at the same time the Division I DG was down for maintenance. A dispersant was added to the Division II DG fuel oil storage tank and on March 21, 1990, an Amendment Change Request was submitted to change Technical Specifications to allow for use of a higher grade of fuel oil, to increase time allowed to correct fuel oil problems before declaring the associated DG inoperable, and to improve testing requirements for fuel oil.

To prevent recurrence, site Chemistry personnel are performing an evaluation to determine the cause of the fuel oil degradation. This evaluation includes analysis of the fuel oil that failed the test, sludge from the tank, and the additives that have been added to the fuel oil. Further corrective actions will be based on this evaluation. Additionally, an engineering evaluation is being performed to determine possible improvements of storage facilities to reduce accumulation of water and contaminants, to provide filtering of the fuel oil from on-site sources, and to enhance maintenance/cleaning of the fuel oil storage tanks. A supplemental report will be provided, detailing any additional corrective actions based on the evaluations.

Energy Industry Identification System Codes are identified in the text as [XX].