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SUBJECT: LER 87-007-01:on 870128,diesel fuel storage tank sample did not meet Tech Spec surveillance requirements.

W/8 ltr.

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Turkey Point Unit 3	0 5 0 0 0 2 5 0	1 OF 0 5

TITLE (4) Diesel Fuel Storage Tank Sample Did Not Meet Technical Specification Surveillance Requirements

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)
									Turkey Point Unit 4	0 5 0 0 0 2 5 1
0 1 2 8		8 7	8 7	0 0 7	0 1	0 6	2 2	8 8	N/A	0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	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
Randall D. Hart, Licensing Engineer	3 0 5 — 2 4 6 - 6 5 5 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	

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)

On January 28, 1987, while Unit 3 and Unit 4 were at 100% power, the requirements of Technical Specification (TS) 3.7.1.d for the fuel oil storage tank for the emergency diesel generators (EDGs) were not met. On January 12, 1987, samples from the fuel storage tank were taken and sent off to an offsite laboratory to perform analyses for viscosity, water and sediment as per TS requirements. A review of the results on January 28, 1987 revealed that the sample for the fuel storage tank exceeded the acceptance criteria for water and sediment. At 1930 on January 28, 1987, the fuel storage tank was declared out of service and since TS 3.7.1.d does not provide any action statements for the fuel storage tank, both Unit 3 and Unit 4 were placed into TS 3.0.1. Additional samples were taken from the fuel storage tank and sent to the General Office Power Resources Laboratory and to the St. Lucie nuclear plant for additional analyses. At 0015 on January 29, 1987, satisfactory sample results were received and both units were declared out of TS 3.0.1. The procedure for sampling the fuel storage tank did not provide clear guidance for obtaining the fuel samples. This procedure has been revised to provide adequate guidance. A task team was formed to review this event to address long term corrective actions which are described in further detail in the text of this LER.

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

EVENT:

On January 28, 1987, while Unit 3 and Unit 4 were at 100% power, the requirements of Technical Specification (TS) 3.7.1.d for the fuel oil storage tank for the emergency diesel generators (EDGs) were not met. On January 12, 1987, fuel oil samples were taken from the fuel oil storage, day and skid tanks and sent to an offsite laboratory for analysis. This was done to meet the requirements of TS 4.8.1.b of verifying at least once per 92 days that a sample of diesel fuel from the fuel storage tank is within acceptable limits when checked for viscosity, water, and sediment. The analysis was completed on January 19, 1987 and the results of the analysis were received on the Turkey Point site on January 27, 1987. A review of the results on January 28, 1987 revealed that the sample for the fuel storage tank exceeded the acceptance criteria for water and sediment. The results for the day and skid tanks for both the A and B EDGs were within the acceptance criteria and therefore the fuel was acceptable for use. The Plant Nuclear Safety Committee (PNSC) reviewed these results and at 1930 on January 28, 1987, the fuel storage tank was declared out of service and since TS 3.7.1.d does not provide any action statements for the fuel storage tank, both Unit 3 and Unit 4 were placed into TS 3.0.1.

At this time an event response team (ERT) was formed to determine both short and long term corrective actions to remedy this situation. Additional samples were taken from the fuel storage tank and shipped to the General Office Power Resources Laboratory and to the St. Lucie nuclear plant for additional analyses.

The St. Lucie Plant performs analyses of fuel oil for water and sediment under an FPL approved Quality Assurance Program. Although the Power Resources Test Laboratory is not approved by FPL Quality Assurance to perform diesel fuel oil testing for FPL's nuclear plants, it was decided to have samples analyzed by them as an early indication of the condition of the fuel. The Power Resources Test Laboratory is experienced in the performance of oil samples by virtue of its function in performing oil analyses for FPL's fossil fueled power plants and uses industry standard ASTM analyses procedures.

While these samples were being analyzed, the NRC was being contacted to request Region II evaluation of granting discretionary enforcement, in that no unit shutdown will be commenced until the new samples were analyzed. The basis for this request was the potential that the original sample was not representative of actual diesel fuel conditions which resulted from not collecting the sample in accordance with ASTM sampling procedures. This belief is supported by the satisfactory results from the day and skid tanks. At 2115, Turkey Point was informed that the Region II Director of Reactor Projects and Deputy Regional Administrator had granted discretionary enforcement allowing both units to remain at 100% power until such time as the results from the new samples became available.

At 2300, the results from the General Office Power Resources Laboratory sample analyses were found to be satisfactory. At 0015 on January 29, 1987 the satisfactory sample analyses results were received from the laboratory at the St. Lucie nuclear plant. At this time the PNSC was reconvened to review the

results received and to decide on what actions were to be taken. Based on the results of the samples, the fuel storage tank was declared back in service and both units were declared out of TS 3.0.1.

CAUSE OF EVENT:

The significant root causes of this event were determined to be (1) the use of a sampling technique that was not in accordance with industry standard ASTM oil sampling procedures, and (2) sedimentation in the bottom of the tank caused by fuel oil which does not remain stable throughout the long storage time that the fuel oil must undergo.

1) During the investigation it was determined that the sampling technique that was employed by the technician was not in accordance with ASTM oil sampling procedures. Nuclear Chemistry (NC) procedure NC-103, Diesel Fuel Oil Inventory, Receiving Shipments, and Periodic Sampling, did not provide clear guidance for taking samples from the fuel oil storage tank. NC-103 only had a note that provided general instructions on the ASTM method. It was proven, additionally, that the technique employed resulted in a sample that was contaminated by sediments from the tank bottom and thus unrepresentative of the fuel oil storage tank. Subsequent extensive sampling and characterization of the fuel in the tank demonstrated that the fuel in the tank and at the tank outlet (suction to the fuel oil transfer pumps) did in fact meet the requirements of the TS for fuel oil quality.

2) The investigation also focused on the presence of sediment in the bottom of the diesel fuel oil storage tank. Characterization and sampling of the tank revealed that the sediment was limited to within about two inches from the tank bottom. The tank outlet to the transfer pumps is at nine (9) inches from the tank bottom. The sediment is the result of the long storage times that the fuel oil must be subjected to, combined with the oil's short term stability characteristics. In time, fuel oil will oxidize resulting in a breakdown of the fuel oil and the formation of sediment.

ANALYSIS OF EVENT:

Each EDG at Turkey Point has its own 4000 gallon day tank separated by a concrete wall from the tank of the other EDG. This tank, designed as a Class I structure, gravity feeds its associated EDG skid mounted 275 gallon fuel tank. The two day tanks are supplied by one common fuel storage tank having a capacity of 64,000 gallons. When the samples were taken on January 12, 1987, samples were also taken from each day and skid tank for each EDG. The sample results showed that the day and skid tanks for each EDG had fuel oil that was within the acceptance criteria. At the time of the event, the skid tank for the A EDG contained approximately 210 gallons of fuel and the skid tank for the B EDG contained approximately 230 gallons of fuel. Also the day tank for the A EDG contained

approximately 3500 gallons of fuel and the day tank for the B EDG contained approximately 3400 gallons of fuel. These supplies of fuel would have allowed approximately eight (8) hours of operation for each EDG. In addition, the subsequent samples taken indicated that the fuel in the fuel storage tank was within acceptable limits. Based on the above, the health and safety of the public were not affected.

CORRECTIVE ACTIONS:

1) Additional samples were taken from the fuel storage tank and expedited to laboratories for analyses. The results of these analyses revealed that the fuel in the fuel storage tank was within acceptable limits.

2) An event response team was formed in accordance with administrative procedure (ADM) 0-ADM-011, Short Notice Outage Work (SNOW) Response Organization, to determine both short term and long term corrective actions. The team visually inspected several samples at various tank elevations, at the drain line, and at the suction line. At levels of one foot and below (the elevation of the suction line), the color of the fuel oil became darker. Based on this an empty tanker truck was procured and about 2,400 gallons of fuel were drained to it. A fresh load of about 6,500 gallons of fuel was procured and added to the tank. Analysis of the fresh fuel, the tank, and the suction line were obtained and also found satisfactory.

3) A non-conformance report (NCR) was written to request an engineering evaluation of this concern to provide possible corrective actions. The engineering recommended disposition was that based on the tested and untested additional samples taken at that time, the problem was limited to the bottom of the diesel fuel oil storage tank. The affected layer appeared to extend from the bottom of the tank to near the suction nozzle. The suction line itself showed some suspended solids but cleared in less than a full flush volume and the tank drain line showed considerable indication of excessive suspended solids. Other samples taken at one foot intervals from the bottom of the tank also indicated that the concern was limited to the lowest regions of the tank. The uncontrolled nature of the sample points in the January 12, 1987 composite sample would have permitted the lower end sample to be taken in the region below the suction nozzle, thus weighting the test into the unacceptable range.

4) NC-103 has been reviewed and revised to enhance the existing guidance provided for obtaining a fuel oil sample from the fuel storage tank. This guidance deleted the general note on the ASTM sampling techniques and replaced it with specific guidance in accordance with ASTM sampling techniques. This enhanced guidance ensures the ability to procure a representative sample of the contents of the fuel oil storage tank(s) is taken.

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

5) An additional task team was created to address long term corrective actions to prevent recurrence. These actions included:

- Based on an opportunity presented by Unit 3 being in a refueling outage and Unit 4 being in cold shutdown for a maintenance outage, it was decided to drain & clean the main EDG fuel oil storage tank. The tank was cleaned in accordance with procedure 0-PMM-022.4, Diesel Oil Storage Tank Cleaning. The fuel oil drained out of the tank was filtered and stored in fuel tanker trucks. The fuel oil tank was cleaned, inspected and minor repairs were made as necessary. The stored fuel was returned to the fuel oil tank through another set of filters. 0-PMM-022.4 states that the EDG fuel oil storage tank should be cleaned at least once every 10 years.

- In order to minimize future sedimentation and microbial growth, a fuel stabilizer and biocide treatment program was implemented. This chemical treatment program was evaluated for acceptability by a safety evaluation performed in accordance with the requirements of 10 CFR 50.59.

- The day and skid tanks for the A and B EDG were also drained and cleaned to remove any accumulation of sediment.

ADDITIONAL DETAILS:

Similar Occurrences: None

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JUNE 2 2 1988

L-88-246
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Reportable Event: 87-07 (Revision 1)
Date of Event: January 28, 1987
Diesel Fuel Storage Tank Sample Did Not Meet
Technical Specification Surveillance Requirements

The attached Licensee Event Report Revision is being submitted to provide an update on the corrective action. Our original report was issued February 27, 1987 in FPL letter L-87-97.

Very truly yours,

W. F. Conway
Senior Vice President - Nuclear

WFC/SDF/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator,
Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

SDF3Rev1.LER

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