PSEG

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

July 3, 1995

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

Dear Sir:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
UNIT NO. 1
LICENSEE EVENT REPORT 95-007-00

This revised Licensee Event Report is being submitted pursuant to the requirements of 10CFR 50.73(a)(2)(i)(B).

Sincerely,

Mark E. Reddemann
General Manager -
Hope Creek Operations

LAA/
SORC Mtg. 95-053
C Distribution

LICENSEE EVENT REPORT

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
HOPE CREEK GENERATING STATION	0 5 0 0 0 3 5 4	1 OF 7

TITLE (4): Condition Prohibited by Plant Technical Specifications - Diesel Fuel Oil Storage Tank level found below Technical Specification minimum level requirement.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	NUMBER	REV	MONTH	DAY	YEAR	FACILITY NAME(S)	DOCKET NUMBER(S)
0 6	0 3	9 4	9 5	- 0 0 7	- 0 0	0 7	0 3	9 5		

OPERATING (9) MODE		POWER LEVEL %		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)			
	4	0 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)
				20.405(a)(1)(iii)	XX 50.73(a)(2)(i)(B)	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
Lou Aversa, Senior Staff Engineer - Technical	6 0 9 3 3 9 3 3 8 6

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE NOTED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS?
B									

SUPPLEMENTAL REPORT EXPECTED? (14)	YES		NO	x	DATE EXPECTED (15)	MONTH	DAY	YEAR

ABSTRACT (16)

During April and June of 1995, Quality Assurance Department Personnel were conducting an audit of the Hope Creek Operations Department which included a review of Incident Report (IR) root causes and corrective actions that were performed for the previous year. The review determined that an IR related to an out of calibration level indicator for a Diesel Fuel Oil Storage Tank (DFOST) may have met the reportability requirements of 10CFR 50.73. The follow-up review of the IR determined that the event should have been reported. The root cause of the fuel oil storage tanks being below technical specification minimum requirement is a design deficiency. Contributing factors include: Operations personnel response to the alarm and less than timely performance of the calibration check of the instrumentation, partial modification of an alarm response procedure which led to a misjudgment in determining margin above technical specification minimum level. The root cause of not reporting this event in 1994 was misjudgment on the part of the individuals who made the initial reportability determination. Corrective actions for this event will include appropriate changes to the level instruments and/or setpoints, an upgrade to procedures for determining reportability, improving operator response to alarms and timeliness of corrective action initiation.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
Diesel Generator Fuel Oil Storage System: JE, EIIS Identifier: DC

IDENTIFICATION OF OCCURRENCE

TITLE (4): Condition Prohibited by Plant Technical Specifications - Diesel Fuel Oil Storage Tank level found below Technical Specification minimum level requirement.

Event Occurrence: June 3, 1994
Event Time: 1000
Discovery Date: June 4, 1995

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation)
Reactor Power 100% of rated, 1102 MWe

DESCRIPTION OF OCCURRENCE

During April and June of 1995, Quality Assurance Department Personnel were conducting an audit of the Hope Creek Operations Department which included a review of Incident Report (IR) root causes and corrective actions that were performed for the previous year. The review determined that an IR related to an out of calibration level indicator for a Diesel Fuel Oil Storage Tank (DFOST) may have met the reportability requirements of 10CFR 50.73. The follow-up review of the IR determined that the event should have been reported.

On June 3, 1994, an Equipment Operator (EO - non-licensed) performing routine rounds discovered that the fuel oil storage tank levels for the "C" Emergency Diesel Generator (DG) were below the Technical Specification (TS) minimum level required for DG operability. The DG was immediately declared inoperable and TS actions for an inoperable DG were initiated. The fuel oil storage tank level was restored to operable status and the DG was declared operable. A review of the previous days tank level readings indicated the tank was above the minimum required level. Between the acceptable and out of specification reading, a calibration of the instruments for both tanks was performed that affected the indicated tank level. Since it was believed that appropriate TS actions were implemented when the low level was discovered and the actions were completed within the allowable action times, it seemed that a technical specification non-compliance had not occurred.

ANALYSIS OF OCCURRENCE

Hope Creek Technical Specification 3.8.1.1. requires that each DG have a minimum volume of 48,800 gallons of fuel oil available in the storage tanks. The Fuel Oil Storage System consists of two 26,000 gallon capacity tanks for each diesel generator. Each tank can be filled to 25,200 gallons. Each tank is supplied with a level indicator with an indicating range of zero to 26,100 gallons and a low level alarm set at 25,000 (24,967 per the setpoint calc) gallons. The low level setpoint was selected based on the assumption each tank was supplying half of the required volume, 24,400 gallon each, and allowances for instrument drift, loop accuracies and density variation due to ambient temperature changes.

Prior to the identification of the low tank level indication in June of 1994, operators had received several low level alarms on the "E" and "F" FOSTs for the "C" DG. Two work requests were issued, one on January 31, and one on February 2, 1994, which stated that the low level alarm was annunciating with the indicated tank level at 25,400 gallons. The work requests stated that the alarm should annunciate at 24,400 gallons and requested the alarm switch calibration to be checked. No further operator action was taken at this time as the indicated storage tank levels were within acceptable limits.

As part of the Planning Department's follow up to the work requests issued for the above issue, an action request was issued to System Engineering to determine if the alarm circuit was functioning as designed. The engineering review determined that the circuit was working as designed; however, the 24,400 gallon alarm setpoint specified in the procedure was incorrect. Engineering submitted a revision request to change the alarm setpoint in the procedure to 24,967 gallons. The setpoint in the procedure was revised; however, the operator actions were not revised accordingly to alert operators that when the alarm actuates at 24,967 gallons that they should treat the tank level as being at the technical specification minimum of 24,400 gallons. The operators were inadvertently led to believe the alarm condition and indicated level were consistent.

On June 1, 1994, Instrument & Controls (I&C) technicians received the work orders to check the calibration of the alarm switches for the "E" and "F" FOSTs. A calibration check was started on the "F" storage tank level instruments on June 1. The alarm switch and level indicator as found calibration data was satisfactory. The technician did find the transmitter that supplies the signal to the alarm and indicator out of calibration. The transmitter was recalibrated. The as found signal deviation should have resulted in a 1100 gallon change in indicated level; however, no level change was noted the following day for "F" storage tank. On June 2, the "E" storage tank calibration was checked with the as found data for the transmitter and alarm switch being acceptable. The recorded as found data for the "E" tank level indicator was not within the acceptable range specified on the work

ANALYSIS OF OCCURRENCE

order; however, the data sheet was signed as satisfactory. The data recorded for the level indicator would result in a lower than actual reading on the "E" storage tank level indicator. Although no changes were made to the instrument calibrations for the "E" storage tank, the indicated level recorded the following day was 23,900 gallons, 100 gallons less than previously recorded. The recorded level for the "F" storage tank level on June 3, was 24,800 gallons, 200 gallons lower than the two previous days. The combined storage tank levels prior to the calibration work was 49,000 gallons. The recorded level change two days after the calibrations were performed was 48,700 gallons.

While the total deviation in indicated level did change by 300 gallons, the reason for no indicated level change on the "F" storage tank the day after the calibration could not be explained. The level instrument for the "E" tank, that was believed to be out of calibration based on the information contained in the work order, was found to be within calibration when a retest was performed during this follow-up investigation conducted in June of 1995. The change in level indication on the "E" tank between June 1, and June 3, could not be explained at this time.

Based on the information provided in the initial event follow-up, it is reasonable to believe that the storage tank levels could have been misread by operating personnel. The installed level instruments are marked in increments of 1,000 gallons, in the normal operating range, and the spacing between the increments is not equally spaced to account for the horizontal installation of a cylindrical tank. The range of the instrument covers the entire volume of the storage tank from 0 to 26,100 gallons. The instruments are curved edgewise meters, mounted approximately 6.5 feet above the floor. The normal tank operating level is in the last 8% of the entire indicating range of the level instrument. Expecting operations personnel to obtain an accurate reading on each tank and then determine total tank level within 100 gallons for technical specification purposes with the installed instruments is unreasonable. The storage tank levels are typically maintained at 50,000 gallons, or approximately 1200 gallons above the technical specification minimum providing a reasonable margin above tech spec minimums.

The alarm setpoints were chosen to prevent a tech spec violation by allowing for the amount of deviation that could be introduced due to loop inaccuracy. The alarm point was set at 24,967 gallons, based on the tech spec minimum of 24,400 gallons in each tank plus an allowance of 567 gallons for setpoint drift. The setpoint drift allowance is largely due to the overall range of the instrument. This setpoint results ir the storage tanks often being in alarm, even though the indicated level is not near the tech spec minimum. The tanks can only be filled to 25,200 gallons which is just above the point at which the low alarm clears. The fill valve for the storage tanks is set to close at 25,200 to prevent overfilling even though there is still 900 gallons

ANALYSIS OF OCCURRENCE

of available volume in the tank. During a diesel run, the oil level in one or both tanks may drop to the alarm setpoint due to the limited tolerance between the fill and alarm setpoints. The result is that operators are conditioned to operate with frequent alarms. By not adding fuel oil to the tank when the alarm annunciates, the allowances made in the setpoint calculations for the loop inaccuracies are discounted. In addition to the loop inaccuracies, deviations in the level readings occur due to the lack of appropriate divisions on the scale and parallax error when being read by different operators due to the installed height of the instrument. These factors result in an inability to obtain accurate readings with some certainty and repeatability.

This event was not reported in 1994 since it was believed that at the time of discovery of a tecn spec action being applicable, actions were taken under the allowable outage time of the tech spec to restore tank level and return the diesel to operable status. The above determination was appropriate regarding actions to meet operability, but the review did not include a determination of how long the tank was below minimum level for reportability concerns.

The level deviation problem identified in January and February of 1994 was due to the wrong alarm setpoint being specified in the alarm response procedure. The operators observed a deviation between indicated tank level and what they believed to be the alarm setpoint. The initial action to issue a work request to check the instrumentation was appropriate; however, the timeliness of the calibration check and assumption that the alarm was invalid was not appropriate. The work requests to check the calibration should have been performed shortly after the identification of the discrepancy to determine which device was correct and initiate actions based on the calibration results. The assumption that indicated level was correct delayed the discovery of the out of calibration condition of the level instrument. If the level deviation was corrected sooner, the event of June 3, may have been avoided.

APPARENT CAUSE OF OCCURRENCE

The root cause of the fuel oil storage tanks being below technical specification minimum requirement is a design deficiency. Contributing factors are Management and Staff inability to recognize the significance of the deficiencies on operation and technical specifications. Operations personnel response to the alarm and less than timely performance of the calibration check of the instrumentation contributed to this event. The individuals involved assumed the level indicator was correct and the setpoint had drifted, a misjudgment.

APPARENT CAUSE OF OCCURRENCE

The root cause of not reporting this event in 1994 was misjudgment on the part of the individuals who made the initial reportability determination.

SAFETY SIGNIFICANCE

This incident posed minimal safety significance. The total minimum volume of fuel oil required under technical specifications is 49,000 gallons for each diesel generator. The total is based on a minimum of 200 gallons in the day tank and 48,800 gallons in the two storage tanks. While the indicated volume for the "E" and "F" tanks was 100 gallons below the minimum during this period, the indicated volume of the day tank was between 460 to 500 gallons. The combined volume of all tanks was maintained approximately 260 gallons above the minimum requirement for the entire period. The amount of fuel oil on hand is based on the diesel operating fully loaded for seven days following an accident. All loads powered from this diesel are not expected to be operating for the entire seven day period and selected redundant loads would be secured by operating personnel prior to seven days of operation. In addition, operating procedures contain guidance on the ordering of additional oil and transferring of fuel oil between storage tanks, during emergencies, to maintain required equipment available.

PREVIOUS OCCURRENCES

There has been one previous event reported of a technical specification non-compliance related to diesel fuel oil storage tank level. See LER 89-010-00. The non-compliance in the previous event was due to not properly administering the Technical Specification action when the low level was discovered.

CORRECTIVE ACTIONS

The transmitter was calibrated in 1994.

Operations Department is implementing interim corrective actions to preclude a recurrence of this type of event.

Appropriate changes for the fuel oil storage tank level instrumentation and/or setpoints will be implemented.

This incident will be reviewed with Operations Department personnel regarding appropriate actions to confirm alarm validity.

CORRECTIVE ACTIONS

Personnel involved in the original reportability determination will review this event for lessons learned.

An appropriate change will be incorporated into the reportability determination procedure based on the results of the above corrective action.

The previous corrective action to revise the alarm response procedure setpoint to 24,967 gallons without a revised operator action will be reviewed for lessons learned.

The alarm response procedure will be revised to include appropriate operator actions upon receipt of the tank low level alarm.

The Instrument and Controls Technician and Supervisor who recorded, reviewed and approved the incorrect calibration data have been counseled.

Sincerely,

Mark E. Reddemann
General Manager -
Hope Creek Operations

SORC Mtg. 95-053
Recommended approval: Yes
C Distribution