

Public Service  
Electric and Gas  
Company

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JUL 10 1992

NLR-N92094

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Gentlemen:

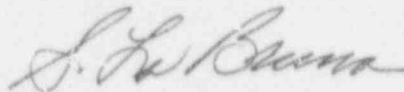
RESPONSE TO NOTICE OF DEVIATIONS AND  
UNRESOLVED ITEMS  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

On June 3, 1992, Public Service Electric and Gas Company (PSE&G) received NRC Inspection Report No. 50-354/92-80 for the Electrical Distribution System Functional Inspection conducted from January 27 to February 14, 1992. PSE&G hereby responds to the Notice of Deviation transmitted as Appendix A of this inspection report (Attachment 1). PSE&G is also transmitting the responses for Unresolved Items 354/92-80-10, 354/92-80-15, and 354/92-80-16 as requested by the NRC (Attachment 2).

PSE&G is submitting this response consistent with the schedule discussed with Mr. W. Ruland on July 1, 1992.

If you have any questions regarding this transmittal, please contact us.

Sincerely,



Attachments

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ATTACHMENT 1  
NLR-N92094

Public Service Electric and Gas Company  
Hope Creek Generating Station  
Unit No. 1  
Docket No. 50-354

Deviation 1

Hope Creek Updated Final Safety Analysis Report (UIAR), Paragraph 8.3.1.1.3.10 states that "A comprehensive preventive maintenance (PM) program for the emergency diesel generator (EDG) incorporates the latest vendor recommendations..."

Contrary to the above, on February 14, 1992, there was no evidence that the licensee has included the recommendation of Fairbanks Morse (EDG Vendor) Service Information Letter (SIL) Volume C, Issue 4, dated April 15, 1985, and SIL Volume C, Issue 4, Revision 2, dated February 2, 1989, which requires a specific testing of the EDG to determine if they have generator shaft currents which can damage the engine and generator bearings. This condition has existed since the issuance of the first SIL in April 1985.

Response

PSE&G agrees with the deviation.

A review to determine the cause of the procedural deficiency to reflect the vendor's recommendations presented in the Service Information Letter (SIL) was performed.

On February 20, 1989, Fairbanks Morse transmitted revision 2 of the subject SIL to PSE&G. This revision was received and reviewed by PSE&G in June of 1989. It was determined at this time that the SIL was adequately addressed by existing procedures. Upon further review of the SIL and existing procedures during the NRC Electrical Distribution System Functional Inspection (January 27 - February 14, 1992), PSE&G determined that the existing procedure lacked the appropriate detail and direction required by the SIL although the procedure required a shaft voltage measurement to be taken. This voltage measurement was not taken properly due to the vagueness of the steps listed in the procedure.

## Corrective Actions and Actions to Avoid Further Deviations

PSE&G revised the appropriate preventive maintenance procedures in accordance with the Fairbanks Morse SILs and issued the revised procedure on March 5, 1992. Due to personnel safety concerns, the testing utilizing the revised procedure has not been performed since the diesel must be inoperable to alleviate these safety concerns. The revised procedure requires that the shaft guard be removed to provide the necessary access needed to take the shaft voltage measurements. PSE&G will test the EDGs to the revised procedure during the fourth refueling outage when the EDGs will be out of service for preventive maintenance. The fourth refueling outage is currently scheduled to begin in September of 1992.

### Deviation 2

Hope Creek UFSAR, paragraphs 9.5.4.2 and 1.8.1.137, indicates that the EDG fuel oil storage system is sized in accordance with the requirements of Regulatory Guide 1.137, Revision 1, which in turn refers to ANSI Standard N195-1976. This standard requires the day tank capacity for each EDG to be sufficient to maintain at least 60 minutes of EDG operation at the level where fuel oil is automatically added. This capacity is to be based on the fuel consumption at a load of 100% of the continuous rating of the diesel plus a minimum margin of 10%.

Contrary to the above, on February 14, 1992, there was no evidence that the EDG day tank capacities meet the above commitment. The licensee estimated the day tank capacities to be about 47 minutes.

### Response

PSE&G agrees with this deviation.

ANSI N195-1976 section 6.1 requires that "each EDG shall be equipped with a day tank whose capacity is sufficient to maintain at least 60 minutes of operation at the level where oil is automatically added to the day tank. This capacity shall be based on the fuel consumption at a load of 100% of

the continuous rating of the EDG plus a minimum 10 % margin." The present setpoint of the EDG fuel oil transfer pumps only allows for approximately 30 minutes of operation of the EDG at full rated load.

#### Corrective Actions

PSE&G will revise the start setpoint of the EDG fuel oil transfer pumps to meet the requirement of ANSI N195-1976 section 6.1. This setpoint change will be implemented via a design change package no later than the end of the fourth refueling outage which is currently scheduled to begin in September of 1992.

#### Corrective Actions to Avoid Further Deviations

PSE&G will be submitting a change to the Technical Specifications to revise the minimum EDG fuel oil day tank level to correspond with the revised setpoint.

#### Deviation 3

Hope Creek UFSAR, paragraph 9.5.4, states that "each set of storage tanks can store a quantity of fuel oil that is sufficient for 7 days of continuous operation of one EDG unit under rated full operating loads as described in EDG loading tables 8.3-2 through 8.3-6."

Contrary to the above, calculation JE-0014 dated January 27, 1992, indicates insufficient fuel oil reserves for 7 days (a combined shortage of 5579 gallons) of continuous worst case loading based on the basis of segregated channel storage.

#### Response

PSE&G has reviewed this deviation and concurs that based on the current loading tables in the Hope Creek Updated Final Safety Analysis Report (UFSAR) there is not a 7 day supply of fuel oil for each diesel generator.

PSE&G committed in the Hope Creek UFSAR to size the EDG fuel oil storage system in accordance with the Standard Review Plan (SRP) section 9.5.4, and Regulatory Guide 1.137. The SRP states the "a minimum of seven days' supply of fuel oil, for each redundant diesel generator system, has been provided onsite to meet the engineered safety feature load requirements following a loss of offsite power and a design basis accident." Regulatory Guide 1.137 states that the "the design of fuel-oil systems for diesel generators that provide standby electrical power for a nuclear power plant that are included in ANSI N195-1976 provide a method acceptable to the NRC staff for complying with the pertinent requirements of General Design Criterion 17 of Appendix A to 10 CFR Part 50.

ANSI N195-1976 allows two different methods for calculating the required onsite fuel oil storage capacity. These two methods are (1) calculation based on the assumption that the diesel generator operates continuously for 7 days at its rated capacity, and (2) calculation based on time-dependent loads of the diesel generator. The minimum required capacity based on the second method should include the capacity to power the engineered safety features. The ANSI standard also states in section 5.2 that "the on-site oil storage shall be sufficient to operate the minimum number of diesel generators following the limiting design basis accident for either seven days, or the time required to replenish oil from sources outside the plant site following any limiting design basis event without interrupting the operation of the diesel, whichever is longer."

Calculation JE-0015 was performed by PSE&G to determine the fuel oil storage capacity for the Hope Creek EDGs. This calculation was based on the time dependent loads listed in Tables 8.3-2 to 8.3-6 of the Hope Creek UFSAR. It was determined that the worst case consumption of fuel oil would occur in the case of a loss of offsite power with a design basis accident and the loss of the B EDG. On the basis of this calculation, if no credit is taken for the fuel oil of the idle diesel generator, the onsite storage capacity would be capable of providing 6 days and 16.6 hours of operation in accordance with the ANSI standard. If the additional requirement of the Standard Review Plan is applied, then the onsite storage capacity is reduced to 5 days 22.9 hours including the 10% margin required by the ANSI standard. The most limiting EDG is the "A" EDG.

#### Corrective Actions

PSE&G is currently reviewing the very conservative load tables (8.3-2 to 8.3-6) in the Hope Creek UFSAR against Emergency Operating Procedures to determine the actual loads required in the one hour to seven day time period following a design basis accident. Upon completion of this review, the load tables in the UFSAR will be revised and the required diesel fuel oil storage capacity will be recalculated using the new load tables. Revision of the UFSAR load tables will be completed by October 1, 1992. PSE&G believes that recalculating the required fuel oil storage capacity based on the revised load tables should demonstrate that there is sufficient fuel oil to power engineered safety feature loads for seven days following a loss of offsite power concurrent with a design base accident.

Attachment 2  
NLR-N92094

Public Service Electric and Gas Company  
Hope Creek Generating Station  
Docket No. 50-354

PSE&G is providing the following information as requested by the NRC in letter, "Electrical Distribution System Functional Inspection of Hope Creek Generating Station" dated May 28, 1992.

Unresolved Item 354/92-80-10

NRC

In the past three years, there were four failures on the transformer load tap changers (LTC). Three of the failures were on the non Class 1E transformers and one on the Class 1E transformer. The cause of these remains unknown. Failure of the transformer LTC can affect the time-delayed bus transfer and the available voltage at the 480 V motor control centers.

PSE&G

PSE&G has established the following corrective action plan and will report the results of this plan to the NRC by June 30, 1993. The operation of the LTCs will be observed for any sporadic behavior. The LTC position indicator tell tales will be reset whenever required. The actions taken during troubleshooting that could have corrected the problems unknowingly will be reviewed for possible implementation in to the preventive maintenance program. If the results of the preventative maintenance indicates a probable root cause, this root cause will also be included in the report.

Unresolved Item 354/92-80-15

NRC

Based on the EDSFI Team's review and the interviews with the licensee and the documentation presented by the licensee, the team concluded that the adequacy of the licensee's oil analysis program for important-to-safety transformers was questionable, and the material condition of 1BX501 transformer may be degraded. Failure of this transformer would result in a transfer of its load to 1AX501 transformer, and a possible challenge to the emergency diesel generators if the transfer fails.

## PSE&G

PSE&G would like to request a meeting with the NRC to further discuss the issues involved with this Unresolved Item. We believe that this meeting would be beneficial in the resolution of this item.

### Unresolved Item 354/92-80-16

## NRC

While in the battery room, the team and the licensee's system engineer found that one of the battery's jumper terminal posts had separated from the case (but the post was still connected to the plate). This apparently was caused by the strain induced on the post by the jumper cable that connects one half of the cell on one side of the room to the other half of the cell on the other side of the room. The team noted that the cable entry into one side was a smooth transition from the cell post to the conduit. However, on the damaged cell, the transition involved several angles which allowed the cable to swing upward before coming back to meet the cell terminal. This upward sweep produced a moment arm which allowed a continuous side force to be placed on the terminal. The license committed to review the rest of the battery configurations for similar configurations and to replace the damaged cell at the next opportunity.

## PSE&G

The cable connected to the battery post has been rerouted to alleviate the strain on the post. PSE&G contacted the vendor of the battery and the vendor stated, that since the cell post seal was slightly separated from the case and the actual post to cell plate connection appeared to be unaffected, the integrity and qualification of the cell to perform its intended function is unaffected.

A new battery cell has been ordered and will be installed during the next scheduled system outage following receipt of the battery cell. PSE&G has inspected the other Class 1E and Non-1E battery post connections and has determined that no other similar problems exist.