PSE&G

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

Nuclear Business Unit

JAN 17 1996

LR-N96012

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

Attn.: Document Control Desk

Dear Sir:

HOPE CREEK GENERATING STATION
LICENSE NO. NPF-57
DOCKET NO. 50-354
UNIT NO. 1
LICENSEE EVENT REPORT NO. 95-040-00

This Licensee Event Report entitled "Engineered Safety Feature Actuation - Emergency Start due to Improper Removal from Service" is being submitted to the requirements for an automatic Engineered Safety Features actuation, per 10 CFR 50.73(a)(2)(iv).

Sincerely,

M. E. Reddemann
General Manager -
Hope Creek Operations

Attachment LER
SORC Mtg. 96-004
JJK

C Distribution
LER File 3.7

IE22
1/1

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HR. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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TITLE (4)
Engineered Safety Feature Actuation - Emergency Diesel Start due to Improper Removal from Service

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 NAME	DOCKET NUMBER
										05000
12	18	95	95	-- 040 --	00	01	17	96	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	5
POWER LEVEL (10)	0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER
20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
RICHARD SHINDEL, NUCLEAR SHIFT SUPERVISOR	609 - 339 - 3849

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	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 18, 1995, at 0858, the "B" Emergency Diesel Generator (EDG) inadvertently started due to a valid Engineered Safeguard Feature (ESF) signal generated by removing a vital bus from service improperly. Specifically, the EDG started when the undervoltage relay knife switches associated with the normal and alternate supplies to the vital bus were opened without the EDG automatic start feature being defeated. When the knife switches were opened, the EDG automatically started, in accordance with its design logic, due to a sensed Loss of Power (LOP) condition. An operator manually tripped and secured the EDG locally. The Senior Nuclear Shift Supervisor (SNSS) determined that the EDG had started on a valid ESF signal and initiated a Four Hour Report to the NRC. System Engineering performed an analysis that concluded the EDG responded properly.

The root causes of this event include lack of questioning attitude by Operations personnel, lack of effective communication during shift turnover, inadequate work coordination, and procedural deficiencies. Corrective actions include addressing communications issues, procedural revisions, and correcting tagging requests.

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
Emergency Diesel Generator (PE) - EIIS Identifier (EK)

IDENTIFICATION OF OCCURRENCE

TITLE (4): Engineered Safety Feature Actuation - Emergency Diesel Generator start due to Improper Removal from Service

Event Date: December 18, 1995
Event Time: 0858

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 5 (Refueling)
Reactor at 0% of Rated Power

DESCRIPTION OF OCCURRENCE

On December 18, 1995, at 0858, while shutdown for refueling, the "B" Emergency Diesel Generator (EDG) inadvertently started on a valid Engineered Safeguard Feature(ESF) signal. This signal was generated due to removing the 10A402 class 1E 4.16 KV vital bus from service without defeating the EDG automatic start feature. The EDG was secured by an Equipment Operator (EO) at the local control panel.

The EDGs function is to provide power to vital loads on a loss of off-site power. One of the EDGs design logic automatic start signals is the detection of Loss of Power (LOP) as sensed by relays ("27A" relays) that monitor vital bus voltage. A LOP signal was generated when both infeed breakers (normal and alternate) were tagged out during an operation to remove the vital bus from service. This evolution was performed per operations procedure "4.16 KV Bus 10A402 Removal and Return to Service B Channel" (HC.OP-GP.PB-0002(Q)) which directs that breakers be removed from service in accordance with "4.16 KV System Operation" (HC.OP-SO.PB-0001(Q)). Procedure HC.OP-SO.PB-0001(Q) requires the operator to open the knife switches for each associated "27A" relay device as part of tagging each infeed breaker. When the knife switches to the second infeed breaker were opened, a valid LOP signal was generated, this initiated an automatic start for the EDG. Since the automatic start feature for the EDG was not defeated as part of the tagging request, the EDG started.

The following is a sequence of events leading to the EDG start:

As a preparation for the upcoming refueling outage, a tagging request for bus 10A402 was generated. The bus outage was assumed to be scheduled with a maintenance outage on the "B" EDG. This assumption was based on past practice. The EDG was excluded from the bus tagging request to allow testing of EDG auxiliaries. Since the two tagouts were scheduled to be performed concurrently, there was no assessment of the effects of the bus outage on the EDG.

Prior to dayshift turnover on December 18, 1995, the night shift Work Control Center (WCC) Nuclear Shift Supervisor (NSS) commenced performing the prerequisites for tagging bus 10A402. The "B" EDG had not been tagged out and the automatic start feature was not defeated. The night shift WCC NSS later stated that he was aware that, given the current plant configuration, opening the knife switches would start the EDG, but this insight was not included in turnover.

A day shift Nuclear Shift Supervisor (NSS) in the WCC was assigned to complete the tag out of the vital bus per HC.OP-GP.PB-0002(Q). The NSS reviewed the special instructions and briefed the Equipment Operators (EO) about the bus tagging request. An EO asked whether the breakers were to be tagged in accordance with HC.OP-SO.PB-0001(Q), specifically questioning whether the knife switches were to be opened. The NSS directed the EO to perform the tagging in accordance with HC.OP-SO.PB-0001(Q), including the knife switches. The NSS was cognizant that opening the knife switches would generate a LOP signal, but believed the EDG automatic start feature had been defeated due to the concurrent performance of the EDG tagging request.

When the knife switches for the second infeed breaker to bus 10A402 were opened, the EDG started. The "B" EDG was manually tripped in the field.

ANALYSIS OF OCCURRENCE

"4.16 KV Bus 10A402 Removal and Return to Service B Channel" (HC.OP-GP.PB-0002(Q)) is the procedure to remove the 10A402 bus from service. This procedure delineates actions to be taken to minimize the impact on plant operations with the bus out of service. Numerous successful performances of this procedure had previously been performed; however, it was always performed concurrently with the EDG tagged for maintenance. Specific prerequisites were not included in the procedure to disable the EDG automatic start function.

The bus tagging request was sufficient for the protection of the 10A402 bus, but the work was not coordinated with the status of the EDG. A separate EDG outage tagging request was written and assumed to be scheduled with concurrent performance of the bus removal tagging request, but there were no formal mechanisms in place to link the activities.

The NSS did not self check or verify the status of the EDG prior to completing the bus tagging request.

This event is reportable in accordance with 10CFR50.73(a)(2)(iv), ESF Actuations.

APPARENT CAUSE OF THE OCCURRENCE

The night shift WCC NSS, during turnover, did not communicate his understanding of the effect of opening the knife switches.

The procedure "4.16 KV Bus 10A402 Removal and Return to Service B Channel" (HC.OP-GP.PB-0002(Q)) was deficient because it did not provide adequate instructions to prevent the inadvertent diesel start.

In addition, there was less than adequate work coordination in development, approval and release of tagging requests. Specifically, it was believed that scheduling tags to be performed concurrently was sufficient to ensure the work would be performed together.

Finally, the NSS lacked a questioning attitude and performed a less than adequate self-verification, including reviewing EDG status, prior to performing a plant evolution.

SAFETY SIGNIFICANCE

This event had no safety significance. The diesel generator performed as designed. No detrimental effects were noted during the start, run or shutdown of the EDG. The associated vital bus was already deenergized and compensatory actions for the loads supplied by the vital bus were already in place at the time of the event.

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

PREVIOUS OCCURRENCES

There have been three previous reportable events involving diesel generator starts. In the first event, two diesel generators started and loaded on their respective vital busses in response to a valid low voltage signal. See LER 93-003-00. In the second event, a diesel generator started due to an inadvertent bump to a start relay caused by personnel error. See LER 94-016-00. The last event involved a EDG start due to inadequate testing of undervoltage auxiliary relays. See LER 95-033-01. These events were reviewed against the current event and are deemed materially different as to causal nature. Therefore, previous corrective actions would not be expected to prevent this occurrence.

No LERs were found that involved an ESF actuation due to work coordination issues.

CORRECTIVE ACTIONS

A revision has been made to "4.16 KV Bus 10A402 Removal and Return to Service B Channel" (HC.OP-GP.PB-0002(Q)) to ensure that the 10A402 bus is removed from service per "4.16 KV System Operation" (HC.OP-SO.PB-0001(Q)). This revision requires that the EDG is locked out prior to the bus being removed from service. A revision request is in process for the remaining procedures that remove class 1E 4KV busses from service. The procedures will be revised by February 1, 1996.

The remaining vital bus tagging requests scheduled for this refueling outage have been corrected to ensure that the EDGs are protected from this type of occurrence.

The individuals involved in this event have acknowledged accountability for their actions, further they were instrumental in developing lessons learned to prevent reoccurrence. These lessons learned will be communicated to all operating shift personnel. Emphasis will be placed on maintaining a questioning attitude, 'thinking compliance', and effective turnover techniques while performing procedures and tagging. The Quality Validation & Verification (QV&V) and Stop Think Act Review (STAR) programs will be discussed as part of this review. The review will be completed by February 15, 1996.