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

Hope Creek Generating Station

November 20, 1990

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

Dear Sir:

HOPE CREEK GENERATING STATION
D KET NO. 50-354
UNIT NO. 1
LICENSEE EVENT REPORT 90-023-00

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv).

Sincerely,

C.P. Johnson
General Manager -
Hope Creek Operations

RBC/

Attachment
SORC Mtg. 90-106

C Distribution

100-210

The Energy People

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PDR ADOCK 05000354
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95-2170 (2/12-89)

LICENSEE EVENT REPORT

FACILITY NAME (1) HOPE CREEK GENERATING STATION										DOCKET NUMBER (2) 0 5 0 0 0 3 5 4					PAGE (3) 1 OF 4	
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TITLE (4): AUTOMATIC START OF THE "E" FILTRATION, RECIRCULATION, AND VENTILATION SYSTEM - ENGINEERED SAFETY FEATURES (ESF) ACTUATION DUE TO DESIGN INADEQUACY IN CONTROL CIRCUITRY

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)									
1	0	2	2	9	0	9	0	-	0	2	3	-	0	0	1	1	2	0	9	0			

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)									
POWER LEVEL	1	0	0	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	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			
				20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Abstract below			
				20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	and in Text)			
20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)								

LICENSEE CONTACT FOR THIS LER (12)											
NAME Richard Cowles, Senior Staff Engineer - Technical								TELEPHONE NUMBER 6 0 9 3 3 9 3 4 3 1			

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

ABSTRACT (16)

On 10/22/90 at approximately 1615, an automatic start of the "E" Filtration, Recirculation, and Ventilation System (FRVS) occurred. The start of the fan was noted by painters working in the area, and the contract painting supervisor notified the Nuclear Shift Supervisor (NSS, SRO licensed). After verifying that the fan was not running for testing or other reasons, the NSS directed that the fan be stopped and returned to a normal (standby) status. Subsequent investigation of this occurrence took place concurrently with an ongoing engineering evaluation of FRVS flow instrumentation and circuitry based on a similar event in May, 1990 (Ref: LER 90-006). Results of this evaluation concluded that the design of the "E" and "F" FRVS fan auto-initiation circuit is less than adequate. The inherent sensitivity of FRVS flow instrumentation renders the circuitry susceptible to spurious fan starts under normal operating conditions, with only minor fluctuations in system operating parameters. Corrective actions include conducting an engineering evaluation of effects of paint fumes on the "E" FRVS train charcoal bed, and initiating a design change request to modify the "E" and "F" FRVS fan auto-start circuitry. The proposed design change will incorporate a momentary time delay in the circuitry to preclude spurious starts.

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		YEAR	**	NUMBER			**	REV			OF			
HOPE CREEK GENERATING STATION	05000354	90	-	0	2	3	-	0	0	0	2	OF	0	4

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
 Filtration, Recirculation and Ventilation System (FRVS)
 (EIIS Designation: BH)

IDENTIFICATION OF OCCURRENCE

Automatic Start of the "E" FRVS Recirculation Fan - Engineered Safety Features (ESF) Actuation due to Design Inadequacy in Control Circuitry

Event Date: 10/22/90

Event Time: 1621

This LER was initiated by Incident Report No. 90-141

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation), reactor power 100%, unit load 1096MWe.

DESCRIPTION OF OCCURRENCE

On 10/22/90 at approximately 1615, an automatic start of the "E" FRVS recirculation fan occurred. The start of the fan was noted by contract painters working in the area of the unit, and the contract painting supervisor notified the Nuclear Shift Supervisor (NSS, SRO licensed). After verifying that the fan was not running for testing or other reasons, the NSS directed that the fan be stopped and returned to a normal (standby) status. Review of control room strips charts indicated that the fan had been running between 5 and 10 minutes. The start of the fan was not immediately noted by control room personnel because no annunciation exists in the control room to alert operators when an FRVS unit automatically starts.

The NSS initiated a four hour non-emergency report in accordance with 10CFR50.72 due to the apparently spurious nature of the "E" FRVS recirculation fan auto-start. The FRVS system at Hope Creek is classified as an ESF system.

APPARENT CAUSE OF OCCURRENCE

Engineering evaluation of this and past events and review of the FRVS system controls determined the primary cause of this occurrence to be a less than adequate design of the "E" and "F" FRVS recirculation fan auto-initiation circuit.

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ANALYSIS OF OCCURRENCE

The FRVS system is designed to perform two primary functions; removal of radioactive particulates and maintaining negative reactor building pressure in an accident scenario. The "E" and "F" FRVS recirculation fans are normally in standby, and will automatically start if a low flow signal is generated from any one of the "A", "B", "C" or "D" FRVS ventilation trains.

No FRVS testing or maintenance was in progress at the time the fan started, and a review of the control room computer chronolog did not reveal any plant conditions which may have resulted in the start of the fan. All FRVS units were in standby (no fans running) at the time of this occurrence. Although painters were working in the area, no work was taking place immediately adjacent to any of the FRVS units.

Subsequent investigation of this occurrence took place concurrently with an ongoing engineering evaluation of FRVS flow instrumentation and circuitry based on a similar event in May, 1990 (reference: LER 354/90-006-00). (NOTE: This report serves as closure for the commitments made in LER 90-006-00). Results of this evaluation concluded that the design of the "E" and "F" FRVS fan auto-initiation circuit is less than adequate. The flow switches on the FRVS units have a range of 0 - .15"WC, with a trip setpoint of .1"WC. The inherent sensitivity of the flow switches renders the circuitry susceptible to spurious fan starts under normal operating conditions, with only minor fluctuations in system operating parameters. Systems Engineering has determined that the auto-initiation circuits for the "E" and "F" FRVS recirculation fans should be enhanced with a short time delay to preclude spurious starts from these momentary spurious system fluctuations.

A search of the Nuclear Plant Reliability Data System (NPRDS) concluded that no failures of similar flow switches have been reported. All similar flow switches at Hope Creek have been verified to be operating within expected parameters.

PREVIOUS OCCURRENCES

Three spurious starts of FRVS ventilation trains have been previously reported (ref: LERs 87-016, 87-033, and 90-006). The causes of events described in LERs 87-016 and 90-006 could not be definitively determined. The cause of the event described in LER 87-033 was attributed to dirty flow switch contacts on the "A" and "B" FRVS ventilation trains.

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SAFETY SIGNIFICANCE

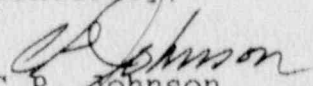
This incident had no safety impact because, had the "E" FRVS recirculation fan been required to start to mitigate the consequences of an analyzed accident, it was already running. Additionally, all other FRVS trains were operable during the course of this event.

As previously noted, a painting evolution under controlled conditions (tents, portable filters, etc.) was in progress in the Reactor Building when this incident occurred. The NSS requested that System Engineering perform an analysis of paint fume effects on the FRVS unit charcoal bed. Based on the conservative assumptions and calculations performed using the percentage of volatiles, length of bed exposure time, and known properties of the coating, it was determined that the "E" FRVS unit did not sustain any measurable damage due to this incident.

CORRECTIVE ACTIONS

1. Systems Engineering will submit a design change request to install a time delay in the auto-initiation circuit of the "E" and "F" FRVS units to preclude spurious actuations due to momentary system perturbations.
2. As previously noted, an engineering evaluation was completed regarding the effects of paint fumes on the "E" FRVS unit charcoal bed. Results of this evaluation indicated no degradation of the charcoal bed.

Sincerely,


 C.P. Johnson
 General Manager -
 Hope Creek Operations

RBC/

SORC Mtg. 90-106