



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

Nuclear Business Unit

FEB 01 1996

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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 NO. 95-033-02

This Licensee Event Report entitled "Technical Specification Surveillance Requirement Implementation Deficiencies" is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B).

This supplement documents the discovery of a Technical Specification surveillance implementation deficiency identified by the Technical Specification Surveillance Improvement Program (TSSIP). As stated in LER 95-033-01, additional Technical Specification surveillance implementation deficiencies discovered by TSSIP with minimal safety significance will be documented in supplements to this LER on a periodic basis until completion of the TSSIP project.

Sincerely,

Mark E. Reddemann
General Manager -
Hope Creek Operations

JPP
SORC Mtg. 96-013

C Distribution
LER File

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PDR ADOCK 05000354
S PDR

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The power is in your hands.

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. 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 (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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Hope Creek Generating Station

DOCKET NUMBER (2)
05000354

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TITLE (4)
Technical Specification Surveillance Requirement Implementation Deficiencies

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
11	14	95	95	033	02	2	3	96		05000
										05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
4	0	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)	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 George Daves	TELEPHONE NUMBER (Include Area Code) (609) 339-3071
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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
D	CC	V	L200	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

LER 95-033-00 described two events that occurred due to identification of a Technical Specification (TS) surveillance test inadequacy. On 11/14/95, the Technical Specification Surveillance Improvement Program (TSSIP) team determined that the undervoltage auxiliary relays were not adequately tested in accordance with the LOGIC SYSTEM FUNCTIONAL TEST requirements. As stated in LER 95-033-01, supplements would be transmitted to document additional findings of the TSSIP team. On 1/4/95, the TSSIP team determined that the Safety Auxiliaries Cooling System (SACS) heat exchanger inlet valves have never been tested to determine proper lineup on a SACS pump start signal in accordance with the requirements of Technical Specification 4.7.1.1.b.1. This supplement provides the details of that event, which is being reported under the provisions of 10CFR50.73(a)(2)(i)(B).

This condition has existed since initial plant startup due to an ineffective review of procedures implementing TS requirements. Corrective actions include a comprehensive review of procedures implementing TS surveillance requirements and surveillance test procedure revisions.

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)

Safety Auxiliaries Cooling System (SACS) - EIIS Identifier {CC}

Reactor Water Cleanup System (RWCU) - EIIS Identifier {CE}

4.16 KVAC - EIIS Identifier {...}

Emergency Diesel Generator - EIIS Identifier {EK}

IDENTIFICATION OF OCCURRENCE

Discovery date: 11/14/95, 12/12/95 and 1/4/96

ESF actuation date: 11/16/95

Date determined to be reportable: 11/14/95, 12/12/95 and 1/4/96

Problem Reports 951114174, 951116123, 951212158 and 960104265

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 4 (COLD SHUTDOWN)

Preparations for transition into Operational Condition 5 (REFUELING) were in progress.

DESCRIPTION OF OCCURRENCE

LER 95-033-00 described two events that occurred due to identification of a Technical Specification Surveillance Test inadequacy. This supplement rewrites the original LER to describe an additional occurrence of a Technical Specification surveillance implementation deficiency identified during the Technical Specification Surveillance Improvement Program (TSSIP) review.

On November 14, 1995, during the TSSIP review of Technical Specification 3.3.3, "Emergency Core Cooling System Actuation Instrumentation", it was determined that the undervoltage auxiliary relays were not adequately tested in accordance with the LOGIC SYSTEM FUNCTIONAL TEST (LSFT) requirements of Technical Specification 4.3.3.2. As a result, the vital bus undervoltage relays were declared inoperable, and a Technical Specification Action Statement was entered for the failure to perform the appropriate surveillance testing.

The surveillance test was revised to address the concerns that TSSIP identified. On November 16, 1995, during the performance of the revised surveillance on the 'A' 4 kV vital bus, a bus transfer occurred at 0521. The 'A' Loss of Offsite Power (LOP) Sequencer initiated per plant design. A four-hour report was made to the NRC at 0841 in accordance with 10CFR50.72(b)(2)(ii).

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DESCRIPTION OF OCCURRENCE (Continued)

On December 12, 1995, the TSSIP team determined that channel calibrations for the Reactor Water Cleanup System (RWCU) instrumentation, required by Technical Specification Table 3.3.2-1, were not being performed appropriately. Specifically, the RWCU ambient temperature instrumentation and differential temperature instrumentation channel calibrations have not included a sensor calibration as specified in Technical Specification Definition 1.4, CHANNEL CALIBRATION.

The RWCU instrumentation was not required to be operable at the time of discovery of the deficient surveillances and no Technical Specification Actions were required to be taken. However, this condition has existed since plant startup and Technical Specification Actions were not previously implemented as required by Table 3.3.2-1. Therefore, this condition is being reported under the provisions of 10CFR50.73(a)(2)(i)(B).

On January 4, 1996, the TSSIP team determined that the SACS heat exchanger inlet valves EG-HV-2491 A&B and EG-HV-2494 A&B have not been tested in accordance with the requirements of Technical Specification surveillance requirement 4.7.1.1.b.1. This surveillance requirement specifies that at least once per 18 months, during shutdown, these valves actuate to their correct position on the appropriate test signal (i.e., a SACS pump start signal).

At 1719 hours on January 4, 1996, the SACS heat exchanger inlet valves were declared inoperable and administratively controlled to ensure performance of the valves' safety function.

ANALYSIS OF OCCURRENCE

As a Corrective Action from LER 95-017, a Technical Specification Surveillance Improvement Program (TSSIP) had been initiated. The charter of this project is to compare the Technical Specification surveillance requirements (with the exception of the Technical Specification 4.0.5 requirements) to the established surveillance procedures to verify that all requirements are met.

During TSSIP review of Technical Specification 3.3.3, "Emergency Core Cooling System Actuation Instrumentation", it was determined that individual contacts, and their configuration, from the undervoltage auxiliary relays and the degraded voltage relays were not tested in accordance with the LSFT requirements of Technical Specification 4.3.3.2. These contacts deal with the load shedding of major 4.16 kV loads of the vital bus, incoming feeder breaker trips and lock outs, diesel generator start permits, and input to the load sequencer. The LSFT is required to be performed at least once per 18 months.

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ANALYSIS OF OCCURRENCE (Continued)

On November 15, 1995 both the degraded voltage and the bus undervoltage surveillance procedures were revised to incorporate the contacts and wiring that needed to be tested to satisfy the Technical Specification surveillance testing.

While testing the 'A' Vital Bus (10A401), a bus transfer occurred when the technician inadvertently touched an adjacent terminal. The bus transfer performed as designed. The 'A' Loss of Offsite Power (LOP) Sequencer initiated per plant design. The affected systems performed as expected and testing was terminated.

In December 1995, the TSSIP reviewed the implementing procedures for surveillance requirements associated with the RWCU. The suction line (reactor coolant pressure boundary portion) of the RWCU contains two motor operated isolation valves that automatically close in response to, among other signals, RWCU equipment compartment high ambient temperature and high differential temperature across the RWCU equipment compartment ventilation ducts. The event concerned the channel calibrations performed for these signals.

In the past, channel calibrations for instrument channels having resistance temperature detector (RTD) or thermocouple (T/C) sensors have been completed by performing an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. This test methodology is consistent with standard industry practice and has been considered to satisfy the surveillance requirements. However, the TSSIP team determined that these surveillance procedures were inconsistent with the literal requirements specified in Technical Specification 1.4, CHANNEL CALIBRATION, which requires calibration of the sensor regardless of whether the channel has an RTD or T/C sensor. Unlike other nuclear plant Technical Specifications, there is no qualifying Technical Specification Table notes in the Hope Creek Technical Specifications to exempt RTDs and T/Cs from the sensor calibration requirements.

The qualifying note was added to other plant's Technical Specifications since calibration of RTDs and T/Cs cannot usually be performed in place. Removal and subsequent re-installation of the sensors introduces a potential for an undetectable failure and alarm considerations that outweighs the benefits of the sensor calibration. In lieu of sensor calibration, an in-place qualitative assessment of sensor behavior is performed. This position was adopted in NUREG-1433, "Improved Standard Technical Specifications for General Electric BWR/4 Plants."

Failure to appropriately perform the surveillances for the RWCU instrumentation requires entry into the Technical Specification Action Statement specified in Table 3.3.2-1. Since this did not occur, this event

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ANALYSIS OF OCCURRENCE (Continued)

is reportable under the provisions of 10CFR50.73(a)(2)(i)(B).

Additional review performed by the TSSIP identified that this condition exists for all of the RTD and T/C sensors for instrumentation listed in Technical Specification Table 4.3.2.1-1, Isolation Actuation Instrumentation Surveillance Requirements, Table 4.3.7.4-1, Remote Shutdown Monitoring Instrumentation Surveillance Requirements and Table 4.3.7.5-1, Accident Monitoring Instrumentation Surveillance Requirements.

In January 1996, the TSSIP team determined that Technical Specification surveillance requirement 4.7.1.1.b.1 has not been performed for the SACS heat exchanger inlet valves. The SACS is designed to provide cooling water to the engineered safety feature equipment, including the residual heat removal heat exchangers, during normal operation, normal plant shutdown, loss of offsite power and loss of coolant accident conditions. Failure to demonstrate that the SACS heat exchanger inlet valve actuates to the open position upon its associated pump start signal at the specified Technical Specification frequency and Operational Condition requires entry into the SACS Action Statement for LCO 3.7.1.1, "with both SACS subsystems inoperable, immediately initiate measures to place the unit in at least Hot Shutdown within the next 12 hours." Since this did not occur, this event is reportable under the provisions of 10CFR50.73(a)(2)(i)(B).

APPARENT CAUSE OF OCCURRENCE

The cause for the failure to properly test the undervoltage relays is procedural inadequacies due to lack of knowledge of what constitutes a satisfactory LSFT. A contributing factor is the lack of guidance regarding the requirements of LSFTs.

The cause of the bus transfer was a test lead coming into contact with a terminal while the technician was attaching test equipment to a relay. Contributing factors were the decision to perform the test while the bus was energized and inadequate job planning in that the effects of conducting the test in an energized cubicle that was not designed for test leads were not completely analyzed.

The apparent root cause of the RTD and T/C deficient channel calibrations was the ineffective review of surveillance procedures intended to satisfy Hope Creek's Technical Specifications during the near-term operating license stage in the 1980s. A contributing factor to this issue was plant staff habit intrusion. Hope Creek was performing the RTD and T/C sensor calibrations in accordance with current industry practice and it was assumed that the intent of the Technical Specifications was being met. The same apparent cause is attributed to the deficient surveillances performed

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APPARENT CAUSE OF OCCURRENCE (Continued)

on the other Isolation Actuation, Remote Shutdown and Accident Monitoring Instrumentation.

The apparent root cause of the missed surveillance tests of the SACS heat exchanger isolation valves is the same as that for the RTD and T/C deficient channel calibrations: ineffective procedures/inadequate review of surveillance activities intended to satisfy Hope Creek's Technical Specifications during the near-term operating license stage in the 1980s.

SAFETY SIGNIFICANCE

Undervoltage relay testing:

Although the undervoltage and degraded voltage relays were declared inoperable due to nonperformance of a surveillance requirement, reasonable assurance existed that the Emergency Diesel Generators would start and energize the bus on a loss of power coincident with a Loss of Cooling Accident, and that all required ESF loads would sequence on the vital bus. This assurance is based on previous successful past performances of the integrated Emergency Diesel Generator test. Additionally, performance of testing on the 'A' and 'C' vital busses demonstrated compliance with the LSFT requirements, and showed all required relays and contacts to be operational.

ESF actuation:

Due to the risks associated with the performance of this surveillance test (i.e., loss of the bus), Operations evaluated each load on the associated bus and provided recommendations regarding the use of redundant equipment to minimize the impact to plant operations. Therefore, the safety significance associated with this event was minimal.

RTD and T/C channel calibrations:

Performance of in-place qualitative assessments of RTD and T/C sensor behavior in lieu of sensor calibrations has been determined to be an acceptable method for demonstrating the operability of the isolation function. This method has been accepted by the NRC and described in NUREG 1433 for this instrumentation. Therefore, there is no safety significance of the failure to perform sensor calibrations as specified in the existing Technical Specification Definition 1.4 for the RTD and T/C sensors.

SACS heat exchanger inlet valve surveillances:

There was minimal safety significance for the inadequate SACS heat exchanger inlet valve surveillance test procedures. The basis for this minimal impact is: 1) the normal position of the heat exchanger inlet valves is open; 2) the SACS operating procedure directs the operator to

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SAFETY SIGNIFICANCE (Continued)

verify that the valve opens following a pump start; 3) the valves fail as-is, which ensures a suction flow path for pumps previously inservice in the event of a design basis accident; and 4) indications available in the control room make the operator aware of a logic malfunction (causing the valve to not open as required), such that compensatory actions can be initiated.

PREVIOUS OCCURRENCES

Failure to follow Technical Specification surveillance requirements has been documented in LERs 95-003-00 and supplements, 95-017-00, 95-034-00 and 95-035-00. LER 95-03-00 documented an event where operators performed a surveillance in an operational condition other than that specified by the Technical Specifications, LER 95-017-00 documented an event where the emergency bus undervoltage logic circuitry was improperly tested, LER 95-034-00 documented a failure to perform Rod Sequence Control System surveillances when required and LER 95-035-00 documented the failure to perform Reactor Mode Switch, Source Range Monitor and Suppression Chamber Level surveillances properly.

In response to LER 95-017-00, the General Manger - Hope Creek Operations chartered the TSSIP to investigate, define, and resolve weaknesses in the Technical Specification Surveillance Program. The events described in this LER were identified as a result of the TSSIP.

CORRECTIVE ACTIONS

The implementing procedures for testing the bus undervoltage auxiliary contacts have been revised to defeat the undervoltage trip function during the performance of the test. The TSSIP group independently reviewed the procedures to ensure satisfactory compliance. This was completed prior to performance of the test procedures.

Logic System Functional Testing will be performed on the 'B' and 'D' vital busses to demonstrate operability of the undervoltage and degraded voltage relays to satisfy requirements of Surveillance Requirement 4.3.3.1. This will be completed prior to entry into Operational Condition 2 or 3, at the end of the current refueling outage.

The TSSIP review will continue, with particular attention to the Logic System Functional Test Requirements in the other instrumentation specifications. The TSSIP will be completed by December 31, 1996.

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CORRECTIVE ACTIONS (Continued)

The Technical Specification Matrix will be updated to reflect new procedures to comply with the LSFT requirement. This will be performed as the TSSIP identifies issues and will be completed by December 31, 1996.

Position papers were prepared to outline the proper test methodology and acceptance criteria for performance of technical specification surveillances, such as LSFT and Channel Functional Test requirements.

Training based on the site approved position papers will be prepared and incorporated into initial and continuing training programs for personnel responsible for the preparation, review, and approval of logic system surveillance procedures. The initial training will be conducted for licensed operators, system managers, procedure writers, and Station Qualified Reviewers, and will be completed by December 31, 1996.

Guidance was provided to the relay and controls technicians regarding the selection and use of M&TE (specifically M&TE with alligator clips).

The Controls Pre-Job Brief Checklist has been revised to ensure the proper use of M&TE.

The procedures used to conduct the LSFT surveillance will be revised to specify the specific alligator clip to be used. This revision will be completed prior to the next time these procedures are used.

A design change to install test points outside these cubicles will be implemented by the end of the next refueling outage.

An exigent License Change Request 95-26 has been submitted to revise the Technical Specification definition of CHANNEL CALIBRATION to permit in-place qualitative assessments of RTD and T/C sensors. Implementation of the resulting Technical Specification Amendment is required prior to entry into Operational Condition 3, Hot Shutdown, following the current refueling outage.

The SACS heat exchanger inlet valves were administratively controlled to ensure performance of the valves' safety function. These valves will remain administratively controlled until the valves are appropriately tested to satisfy the requirements of Technical Specification 4.7.1.1.b.1. This testing will be completed prior to plant startup following the current outage.

Permanent procedure revisions to appropriately test the SACS valves in accordance with the requirements of Technical Specification 4.7.1.1.b.1 will be completed prior to the performance of the next scheduled surveillance test.