

LICENSEE EVENT REPORT

CONTROL BLOCK: 1

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

01 NJSGS 22 00-000000-0003 411111 45
7 8 9 14 15 25 26 30 37 CAT 56

CON'T
01 REPORT SOURCE 16 050003117 0723838 0819839
7 8 60 61 66 67 74 75 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

02 On July 23, 1983, during special testing, it was discovered that Control Rod 2C4 was
03 fully inserted (the associated bank was 228 steps withdrawn). Attempts to withdraw
04 the rod were unsuccessful, and the unit was placed in hot standby for repair of the
05 rod mechanism. The dropping of the rod was apparently obscured by readjustment of the
06 testing reactivity balance. The event involved the potential for operation in a
07 degraded mode in accordance with Technical Specification 6.9.1.9b.

08
09 SYSTEM CODE CAUSE CODE CAUSE SUBCODE COMPONENT CODE COMP. SUBCODE VALVE SUBCODE
RB 11 B 12 A 13 E L E C O N 14 Z 15 Z 16
7 8 9 10 11 12 13 18 19 20
17 LER RO REPORT NUMBER EVENT YEAR SEQUENTIAL REPORT NO. OCCURRENCE CODE REPORT TYPE REVISION NO.
63 039 03 I 0
21 22 23 24 25 26 27 28 29 30 31 32
ACTION TAKEN FUTURE ACTION EFFECT ON PLANT SHUTDOWN METHOD HOURS ATTACHMENT SUBMITTED NPD-4 FORM SUB. PRIME COMP. SUPPLIER COMPONENT MANUFACTURER
B 18 F 19 C 20 A 21 0012 Y 23 Y 24 N 25 C 7 2 0 26
33 34 35 36 37 40 41 42 43 44 47

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

10 Investigation revealed that the control rod drive mechanism cable connector pins had
11 been pushed back into the connector insulator. The pins apparently made sufficient
12 contact until vibration resulted in an intermittent connection and the drop of the
13 rod. The pins were reinserted into the insulator and the mechanism was satisfactorily
14 tested. Investigation of a new type connector is underway.

15 FACILITY STATUS % POWER OTHER STATUS 30 METHOD OF DISCOVERY DISCOVERY DESCRIPTION 32
B 28 000 29 NA A 31 Operator Observation
7 8 9 10 12 13 44 45 46 80

16 ACTIVITY CONTENT RELEASED OF RELEASE AMOUNT OF ACTIVITY 35 LOCATION OF RELEASE 36
Z 33 Z 34 NA NA
7 8 9 10 11 44 45 80

17 PERSONNEL EXPOSURES NUMBER TYPE DESCRIPTION 39
000 37 Z 38 NA
7 8 9 11 12 13 80

18 PERSONNEL INJURIES NUMBER DESCRIPTION 41
000 40 NA
7 8 9 11 12 80

19 LOSS OF OR DAMAGE TO FACILITY TYPE DESCRIPTION 43
Z 42 NA
7 8 9 10 80

20 PUBLICITY ISSUED DESCRIPTION 45
N 44 NA
7 8 9 10 80

8309070333 830819
PDR ADOCK 05000311
S PDR

NRC USE ONLY

NAME OF PREPARER R. Frahm

PHONE (609) 935-6000 Ext. 4309



PSEG

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

Salem Generating Station

August 19, 1983

Dr. Thomas E. Murley
Regional Administrator
USNRC
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Dr. Murley:

LICENSE NO. DPR-75
DOCKET NO. 50-311
REPORTABLE OCCURRENCE 83-039/03L

Pursuant to the requirements of Salem Generating Station Unit No. 2, Technical Specifications, Section 6.9.1.9.b, we are submitting Licensee Event Report for Reportable Occurrence 83-039/03L. This report is required within thirty (30) days of the occurrence.

Sincerely yours,

J. M. Zupko, Jr.
General Manager -
Salem Operations

RF:k11

CC: Distribution

TE 22
4/1

Report Number: 83-039/03L
Report Date: 08-19-83
Occurrence Date: 07-23-83
Facility: Salem Generating Station Unit 2
Public Service Electric & Gas Company
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Reactivity Control Systems - No. 2C4 Control Rod - Inoperable.

This report was initiated by Incident Report 83-125.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 2 - Rx Power 0 % - Unit Load 0 MWe.

DESCRIPTION OF OCCURRENCE:

At 2017 hours, July 23, 1983, during special testing to determine control rod worth following refueling, it was discovered that Control Rod 2C4 was fully inserted (the associated bank was 228 steps withdrawn at the time). It was initially assumed that the rod position indicator had failed; however, subsequent attempts to move the rod were unsuccessful and demonstrated that it was in fact misaligned. The rod was declared inoperable and Technical Specification Action Statement 3.1.3.1c was entered. It is suspected that the rod may have dropped while borating Group C out of the core; the reactivity change associated with the drop could have been obscured during readjustment of the reactivity balance in preparation for a test measurement.

In accordance with the action requirements, attempts were made to restore the rod to the required position. The attempts were unsuccessful, however, and the unit was placed in hot standby at 2135 hours, to allow repair of the inoperable control rod. The shutdown margin was already being maintained within the limits of Technical Specification 3.1.1.1 at the time of the occurrence. The special testing required verification of the shutdown margin every 12 hours and was based on all rods being inserted except the most reactive one, which was assumed to be fully withdrawn. In accordance with Technical Specification 3.10.3, limitations on control rod operability did not apply. Due to the testing, reactor power was at $1E-8$ amps and high neutron flux trip setpoints were reduced to 25% of rated thermal power.

APPARENT CAUSE OF OCCURRENCE:

Investigation revealed that the control rod drive mechanism cable connector pins had been pushed back into the connector insulator block. The pins had apparently made sufficient contact with connector receptacles for the rod to operate normally until the time of the occurrence. The pins had evidently been displaced when the connector

APPARENT CAUSE OF OCCURRENCE: (cont'd)

had been installed following replacement of the head during the refueling. Subsequent vibration of the cable could have then caused intermittent connections and resulted in the rod being dropped.

ANALYSIS OF OCCURRENCE:

Specifications on the moveable control assemblies ensure that acceptable power distribution limits are maintained, the minimum shutdown margin is maintained, and limit the potential effects of a rod ejection accident. The action statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met. Misalignment of a rod requires measurement of peaking factors or a restriction in thermal power. These restrictions provide assurance and fuel rod integrity during continued operation.

Action Statement 3.1.3.1c requires:

With one full length rod inoperable due to being misaligned from its group step counter demand height by more than ± 12 steps (indicated position), power operation may continue provided that within one hour either:

- 1) The rod is restored to operable status within the above alignment requirements,
- 2) The remainder of the rods in the group with the inoperable rod are aligned to within 12 steps of the inoperable rod while maintaining the rod sequence and insertion limits, or
- 3) the rod is declared inoperable and the shutdown margin requirement of Technical Specification 3.1.1.1 is satisfied.

Additional actions are required for continued power operation beyond one hour and depend on which action alternative is selected.

As noted, the shutdown requirements were already being maintained within specification at the time of the incident, and the unit was placed in a timely fashion in a mode in which the rod was not required to be operable. Further, due to the performance of rod worth testing, the limitations did not apply. The event therefore did not involve any undue risk to the health or safety of the public.

Due to the possibility for operation in a degraded mode permitted by a limiting condition for operation, the occurrence is reportable in accordance with Technical Specification 6.9.1.9b.

CORRECTIVE ACTION:

The pins on the problem connector were reinserted into the insulator, and the cable was properly reconnected. The rod was satisfactorily

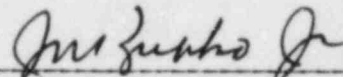
CORRECTIVE ACTION: (cont'd)

tested with no further problems being noted. The unit was returned to Mode 2 on July 24, 1983, and special testing was resumed. Testing was reperformed as necessary to verify previously determined rod worth values. An investigation of the possibility of installing an improved type of connector will be performed; appropriate action will be taken based upon the results of the investigation.

FAILURE DATA:

Westinghouse Electric Co.
Control Rod Drive Mechanism
Model L-106
Crouse Hinds Type Cable Connector

Prepared By R. Frahm



General Manager -
Salem Operations

SORC Meeting No. 83-107