

Report Number: 79-39/03L  
Report Date: 5/15/79  
Occurrence Date: 4/16/79  
Facility Salem Generating Station  
Public Service Electric & Gas Company  
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Inadvertent Entry into Refueling Mode 6

CONDITIONS PRIOR TO OCCURRENCE:

Cold Shutdown Mode 5

DESCRIPTION OF OCCURRENCE:

At 0130 hours, the Senior Shift Supervisor was informed by the Maintenance Supervisor that the reactor head had been unbolted since 4-14-79, placing the unit in Refueling Mode 6. Various maintenance actions were being performed on systems required to be operable during Mode 6 which were out of service when the reactor head was unbolted. The Reactor Coolant System was borated to Mode 5 at 1674 ppm with Keff of .86. The Radiation Monitoring Channels 1R11A, 1R12A and 1R12B were inoperable due to an air monitor modification. The containment purge and pressure/vacuum relief valves were shut in preparation for a design change to the ventilation piping. Open personnel air locks on elevation 100 and 130 were immediately closed. The Action Statements for Technical Specifications 3.3.3.1, 3.9.1 and 3.9.9 were implemented. At 0205 hours, the Radiation Monitor channels were returned to service terminating the Action Statement for T/S 3.3.3.1. At 0610 hours, the RCS boron concentration had been increased to 2012 ppm and T/S 3.9.1 Action Statement was terminated. At this time, Unit 1 met the requirements of Refueling Mode 6 with the containment purge and pressure/vacuum relief valves shut and T/S 3.9.9 Action Statement implemented.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE:

The cause of the inadvertent entry into Mode 6 was failure of the Maintenance Department Supervisor to verify that the Reactor Coolant Systems had been brought up to refueling conditions as required by prerequisite 2.1 of the maintenance procedure for reactor head removal.

ANALYSIS OF OCCURRENCE:

Technical Specification 3.3.3.1 Action Statement requires that with the number of channels operable less than required by the minimum channels operable requirement, comply with T/S 3.9.9 which requires that with the containment purge and pressure and vacuum relief isolation system

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inoperable, close each of the purge and pressure-vacuum relief penetrations providing direct access from the containment atmosphere to the outside atmosphere. The containment purge and pressure-vacuum relief valves were shut when the plant inadvertently went to Mode 6 and remained shut until 2255 hours on 4-16-79 when the valves were verified operable. T/S 3.9.1 Action Statement requires that with either a Keff of 0.95 or less or a boron concentration of  $> 2000$  ppm, whichever is the more restrictive not satisfied, immediately suspend all operations involving core alterations or positive reactivity changes and initiate and continue boration of  $> 10$  gpm of 20,000 ppm boric acid solution or its equivalent until Keff is reduced to  $\leq 0.95$  or the boron concentration is restored to  $> 2000$  ppm, whichever is the more restrictive. Upon entry into Mode 6, Keff was 0.86 but boron concentration was 1674 ppm. Within 4 hours and 40 minutes, the RCS had been borated and verified to be  $> 2000$  ppm. Between the time the reactor head removal was commenced and the time the plant met the requirements of Mode 6, the reactor head remained in place and no reactivity changes occurred which were detrimental to the health and safety of the station personnel or civilian population.

CORRECTIVE ACTION:

Maintenance Department Procedure M8C for the Reactor Head and Internals Removal and Inspection will be revised with a Senior Shift Supervisor's signature required as a prerequisite sign-off that the reactor systems meet the requirements for Mode 6 entry.

FAILURE DATA:

Not Applicable

Prepared By A. W. Kapple

SORC Meeting No. 36-79

  
Manager - Salem Generating Station

# LICENSEE EVENT REPORT

CONTROL BLOCK: \_\_\_\_\_ (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | N | J | S | G | S | 1 | 2 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 3 | 4 | 1 | 1 | 1 | 1 | 4 | \_\_\_\_\_ | 5  
7 8 9 14 15 25 26 30 57 CAT 58  
LICENSEE CODE LICENSE NUMBER LICENSE TYPE

CON'T  
0 1 | R | P | O | R | T | S | O | U | R | C | E | L | 6 | 0 | 5 | 0 | 0 | 0 | 2 | 7 | 2 | 7 | 0 | 4 | 1 | 6 | 7 | 9 | 8 | 0 | 5 | 1 | 5 | 7 | 9 | 9  
7 8 60 61 68 69 74 75 80  
REPORT SOURCE DOCKET NUMBER EVENT DATE REPORT DATE

### EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | During Mode 5 operation, Unit 1 inadvertently entered Mode 6 when work was com-  
0 3 | menced to remove the reactor head. RCS boron concentration was 1674 ppm and the  
0 4 | containment RMS system was inoperable. T/S Actions 3.3.3.1, 3.9.1 and 3.9.9 were  
0 5 | implemented. By 0610 hours, Mode 6 requirements had been met and the Action State-  
0 6 | ments were terminated. No conditions occurred which would be detrimental to the  
0 7 | health or safety of station personnel or the civilian population. This is the  
0 8 | first occurrence of this type.  
7 8 9

0 9 | R | B | 11 | A | 12 | C | 13 | Z | Z | Z | Z | Z | 14 | Z | 15 | Z | 16  
7 8 9 10 11 12 13 18 19 20  
SYSTEM CODE CAUSE CODE CAUSE SUBCODE COMPONENT CODE COMP. SUBCODE VALVE SUBCODE

17 | L | E | R | / | R | O | R | E | P | O | R | T | N | U | M | B | E | R | 7 | 9 | 21 22 | — | 23 | 0 | 3 | 9 | 24 26 | / | 27 | 0 | 3 | 28 29 | L | 30 | — | 31 | 0 | 32  
EVENT YEAR SEQUENTIAL REPORT NO. OCCURRENCE CODE REPORT TYPE REVISION NO.

ACTION TAKEN | FUTURE ACTION | EFFECT ON PLANT | SHUTDOWN METHOD | HOURS | ATTACHMENT SUBMITTED | NPRD-4 FORM SUB. | PRIME COMP. SUPPLIER | COMPONENT MANUFACTURER  
G | 18 | Z | 19 | Z | 20 | 0 | 0 | 0 | 0 | 22 | Y | 23 | N | 24 | Z | 25 | Z | 9 | 9 | 9 | 44 47  
33 34 35 36 37 40 41 42 43 44 47

### CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 | Personnel error in that the Maintenance Supervisor did not verify that the RCS  
1 1 | Systems had been brought up to refueling conditions as required by the reactor  
1 2 | head removal procedure. This procedure will be revised to require the Shift  
1 3 | Supervisor to sign off this verification prior to commencing reactor head removal  
1 4 | operations.  
7 8 9

1 5 | G | 28 | 0 | 0 | 0 | 29 | N/A | 30 | Z | 31 | N/A | 32  
7 8 9 10 12 13 44 45 46 80  
FACILITY STATUS % POWER OTHER STATUS METHOD OF DISCOVERY DISCOVERY DESCRIPTION

1 6 | Z | 33 | Z | 34 | N/A | 35 | N/A | 36  
7 8 9 10 11 44 45 80  
ACTIVITY CONTENT RELEASED OF RELEASE AMOUNT OF ACTIVITY LOCATION OF RELEASE

1 7 | 0 | 0 | 0 | 37 | Z | 38 | N/A | 39  
7 8 9 10 11 12 13 80  
PERSONNEL EXPOSURES NUMBER TYPE DESCRIPTION

1 8 | 0 | 0 | 0 | 40 | N/A | 41  
7 8 9 10 11 12 80  
PERSONNEL INJURIES NUMBER DESCRIPTION

1 9 | Z | 42 | N/A | 43  
7 8 9 10 80  
LOSS OF OR DAMAGE TO FACILITY TYPE DESCRIPTION

2 0 | Z | 44 | N/A | 45  
7 8 9 10 80  
PUBLCITY ISSUED DESCRIPTION  
NRC USE ONLY  
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