

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report Nos. 50-272/82-33
50-311/82-31

Docket Nos. 50-272
50-311

License Nos. DPR-70
DPR-75

Licnesee: Public Service Electric and Gas Company
80 Park Plaza
Newark, New Jersey 07101

Facility Name: Salem Nuclear Generating Station - Units 1 and 2

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: November 9 - December 21, 1982

Inspectors: *L. J. Norrholm* 12/23/82
L. J. Norrholm, Senior Resident Inspector date

R. J. Summers 12-23-82
R. J. Summers, Resident Reactor Inspector date

J. R. White 12/27/82
J. R. White, Senior Radiation Specialist date

Approved By: *L. E. Tripp* 2/23/83
L. E. Tripp, Chief, Reactor Projects Section No. 2A date
Projects Branch No. 2, DPRP

Inspection Summary:

Inspections on November 9 - December 21, 1982 (Combined Report Numbers 50-272/82-33 and 50-311/82-31)

Unit 1 Areas Inspected: Routine inspections of plant operations including tours of the facility; conformance with Technical Specifications and operating parameters; log and record reviews; reviews of licensee events; and followup on previous inspection items. The inspection involved 103 inspector hours by the resident and regional NRC inspectors.

Results: One violation was identified (Noncompliance with a limiting condition for operation for containment isolation instrumentation - Paragraph 5).

Unit 2 Areas Inspected: Routine inspections of plant operations including tours of the facility; conformance with Technical Specifications and operating parameters; log and record reviews; reviews of licensee events; and followup on previous inspection items. The inspection involved 92 inspector hours by the resident and regional NRC inspectors.

Results: No violations were identified.

Report Nos. 50-272/82-33 and 50-311/82-31 DCS Nos.

050272-820929	050311-820913
050272-820930	050311-820915
050272-821002	050311-820923
050272-821006	050311-820926
050272-821017	050311-820927
050272-821018	050311-820928
050272-821025	050311-820929
050272-821104	050311-821002
050272-821113	050311-821004
050272-821121	050311-821005
050272-821122	050311-821008
	050311-821010
	050311-821011
	050311-821013
	050311-821018
	050311-821019
	050311-821020
	050311-821024
	050311-821031
	050311-821119
	050311-821121
	050311-821124

DETAILS

1. Persons Contacted

J. Driscoll, Assistant General Manager - Salem Operations
L. Fry, Operations Manager
J. Gallagher, Maintenance Manager
B. Leap, Station QA Engineer (Acting)
J. Gueller, Operating Engineer
J. Hagan, Maintenance Engineer
J. Jackson, Technical Engineer
H. Midura, General Manager - Salem Operations
L. Miller, Technical Manager
J. O'Connor, Radiation Protection Engineer

The inspector also interviewed other licensee personnel during the course of the inspections including management, clerical, maintenance, operations, performance and quality assurance personnel.

2. Status of Previous Inspection Items

(Closed) Violation (272/82-12-01 and 311/82-13-01) Failure to subject procedures to SORC review and obtain appropriate approval. The licensee responded to this item by letter dated June 25, 1982. The inspector confirmed that the referenced procedures had been revised to demonstrate proper review and had been approved by the General Manager - Salem Operations. The inspector also reviewed Operations Administrative Directive (AD) - 13, Independent Review of Operations Department Documents, Revision 3, dated September 10, 1982. This review confirmed that all applicable procedures in the Operations Department Manual were required to undergo SORC review. A review of the Operations Directives (OD's) confirmed that the review had been conducted as required. The inspector had no further questions on this item.

(Closed) Unresolved Item (311/82-13-03) Monthly inspection of containment fire hose stations. In reviewing this situation, the licensee has concluded that calling containment fire hoses "inaccessible" for the purposes of monthly inspection is inappropriate in view of the number and frequency of containment entries for unrelated purposes. Accordingly, containment fire hoses are to be inspected regularly along with the remaining hose stations in the plant. The inspector confirmed that hoses in both containments had been inspected within the past 30 days. The inspection dates coincided with those of other plant fire hoses. The inspector had no further questions on this item.

- (Closed) Unresolved Item (311/82-13-04) Completion of TMI action item II.F.1. Amendment 9 to Facility Operating License DPR-75, issued July 8, 1982, revised the due date for continuous high range noble gas measurement capability. This system is now required prior to start up from the first refueling outage and will be confirmed through routine inspection.
- (Closed) Follow Item (272/82-27-04) Steam generator manway leakage. Evidence of primary system leakage was observed at steam generator primary manways associated with Nos. 11, 12, and 13 Steam Generators. Investigation and evaluation determined that the leakage could have been caused by incomplete cleaning of surfaces or failure to apply full torque to closure bolting prior to flooding up the reactor cavity during the Spring 1982 outage. Licensee review of the previous outage work package confirmed that only the 400 ft-lb torque pass had been completed prior to raising cavity water level. The gasket vendor indicated that less than full torque (1600-1800 ft-lbs) would not adequately seat the gasket. Visual and non-destructive examination of the bolts, bolt holes and manways identified no evidence of degradation. The inspector confirmed, by review of records and interviews with quality control personnel, that full torque of 1800 + 35 ft-lbs was applied to the manways prior to flooding the cavity during the current outage. The bolt lubricant was also changed to Fel Pro N-5000. The inspector had no further questions on this item.
- (Closed) Unresolved Item (272/82-27-03) Plant Vent - APD problems, Unit 1. As discussed in NRC Inspection Report 50-272/82-27, 50-311/82-26 during Unit 1 containment purge operations on October 17-18, 1982, a number of problems with the Air Particulate Detector (APD) were discovered. During the purge, the control room operators noted an apparent lack of detector response from the APD and a work order was issued to find and correct the problem. The results of the investigation are discussed in detail paragraph 5.

3. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee pursuant to Technical Specifications 6.9.1 and 6.9.2 were reviewed by the inspector. The reports were reviewed to determine that the report included the required information; that test results and/or supporting information were consistent with design predictions and performance specifications; that planned corrective action was adequate for resolution of identified problems; and, whether any information in the report should be classified as an abnormal occurrence.

The following periodic and special reports were reviewed:

- Unit 1 Monthly Operating Report - October 1982
- Unit 2 Monthly Operating Report - October 1982

4. Licensee Events

a. In Office Review of Licensee Event Reports

The inspector reviewed LERs submitted to the NRC:RI office to verify that details of the event were clearly reported, including the accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were involved, and whether the event warranted onsite followup. The following LERs were reviewed:

UNIT 1

- * 82-75/03L Pressurizer Level Channel III Instrument - Inoperable
- 82-76/03L No. 1 Diesel Fire Pump - Inoperable
- 82-77/03L No. 15 Containment Fan Coil Unit - Inoperable Due to Silt in Sensing Lines
- * 82-78/01T Containment-Plant Vent Radioactivity Monitor - Inoperable
- * 82-79/03L Missed Surveillance - DC Batteries and Chargers
- * 82-80/03L Missed Surveillance - Shutdown Margin Calculation
- * 82-81/01T Steam Generator Hydraulic Snubbers - Inoperable
- * 82-82/03L Iodine Removal and Pressure Relief System Fire Detection Instruments - Inoperable

UNIT 2

- 82-106/03L Axial Flux Distribution - Out of Specification for Seven Minutes During Power Change
- 82-107/03L Axial Flux Distribution - Out of Specification for Five Minutes During Power Change

- 82-108/03L No. 1C4 Rod Position Indicator - Inoperable Due to Calibration Drift
- * 82-109/01T Containment Service Water Leak - No. 21 Containment Fan Coil Unit
- 82-110/03L 100' Elevation Containment Air Lock - Inoperable
- * 82-111/01T Containment Service Water Leak - No. 23 Containment Fan Coil Unit
- * 82-112/01T Containment Service Water Leak - No. 21 Containment Fan Coil Unit
- * 82-113/01T Containment Service Water Leak - No. 22 Containment Fan Coil Unit
- * 82-114/03L Radiation Monitoring System - Channels R11A, R12A, R12B Inoperable
- * 82-115/03L No. 2A Emergency Diesel Generator - Inoperable
- 82-116/03L Reactor Coolant System Subcooling Margin Monitor - Inoperable During Plant Process Computer Outage
- * 82-117/03L No. 23 Containment Fan Coil Unit - Inoperable Due to Fouling
- * 82-118/03L Engineered Safety Feature Actuation System - No. 2C Vital Bus Under Voltage Relay - Improper Setpoint
- * 82-119/01T Containment Service Water Leak - No. 21 Containment Fan Coil Unit
- * 82-120/01T Containment Service Water Leak - No. 21 Containment Fan Coil Unit
- * 82-121/03L No. 23 Auxiliary Feedwater Pump - Inoperable
- * 82-122/01T Containment Service Water Leak - No. 24 Containment Fan Coil Unit
- * 82-123/03L No. 21 Containment Fan Coil Unit - Inoperable Due to Low Flow

- * 82-124/03L Reactor Coolant Loops - Inoperable
- * 82-125/03L Solid State Protection System - Train B - Inoperable
- 82-126/03L No. 21 Charging Pump - Inoperable Due to Lube Oil Cooler Leak
- * 82-127/03L Missed Surveillances - Reactor Coolant System Water Inventory
- * 82-128/01T Containment Service Water Leak - No. 23 Containment Fan Coil Unit
- 82-129/03L Containment Air Locks - Inoperable

b. Onsite Licensee Event Followup

For those LERs selected for onsite followup (denoted by asterisks in detail paragraph 4a), the inspector verified the reporting requirements of Technical Specifications and Regulatory Guide 1.16 had been met, that appropriate corrective action had been taken, that the event was reviewed by the licensee as required by AP-4 and 6, and that continued operation of the facility was conducted in accordance with Technical Specification limits. The following findings relate to the LERs reviewed on site:

UNIT 1

- 82-75/03L This report details a recurrent failure in a Rosemount Differential Pressure Transmitter. A like transmitter with similar problems has been sent to the vendor for evaluation, but at this time no failure cause or corrective actions have been reported. In addition, Amendment 47 to Salem Unit 1 Technical Specifications, which permitted a one time deferral of the Pressurizer Level Channel Functional Tests due to the failed transmitter, requires in the Safety Evaluation that the licensee must investigate the cause of the malfunction of Channel III and also the apparent interaction between Channels I and III (documented in NRC Inspection Report 50-272/82-19) and report those findings prior to plant restart. This item will be reviewed further at that time (272/82-33-02).

- 82-78/01T This event is discussed in Detail paragraph 5 of this report.
- 82-79/03L Performance of weekly battery surveillance had been independently scheduled by the cognizant electrical supervisor with no dependence on administrative scheduling. In his absence, the testing was overlooked and was not performed. The inspector confirmed that Inspection Order 200933 has been initiated to cause a weekly work order to be written, assuring that the surveillance test will be conducted. This system will not rely on any individual's memory. No other weekly tests were identified which could be subject to a similar oversight. The remaining tests with such high frequency are conducted by the Operations Department and are appropriately controlled by an administrative scheduling system.
- 82-80/03L These events are discussed in NRC Inspection Report 50-272/82-27.
- 82-127/03L (Unit 2)
- 82-81/01T During the current refueling outage, Technical Specifications required the first functional test of hydraulic snubbers, including the 1000 KIP units installed on the steam generators (4 each). The snubbers were sent to Wyle Laboratories for testing, with the following acceptance criteria; lockup range 1.0 inch/minute, bleed rate less than 0.05 inch/minute. The initial group of 4 snubbers, and ultimately all 16, yielded acceptable lock-up at 1 to 3 inches/minute. However, bleed rates exceeded 6 inches/minute. Analysis indicated that the main piston seals had taken a "set" such that sufficient sealing action was not achieved under operational loads. Prior to returning the snubbers to the site, new seals were installed and a satisfactory test conducted. The bleed rate acceptance criterion was increased to 0.35 inches/minute. This value is well within the envelope specified in NUREG 0467. The licensee also prepared Safety Evaluation S-2-F700-MSE-160, dated November 23, 1982. This evaluation concludes that the as found performance characteristics of the snubbers would not have caused a LOCA under seismic or steam line break conditions. Worst case analysis of design basis failure indicated a possible over-stress of hot leg piping with no break. Technical Specification 4.7.9.c requires retest of all 16 snubbers within 18 months.

With respect to Unit 2, the licensee concludes that operation until the January 1983 outage is acceptable since: the snubbers are newer; the unit has experienced only 15 thermal cycles as opposed to 100 for Unit 1; and, the capacity remaining in the Unit 1 snubbers was sufficient to preclude a pipe break. All 16 Unit 2 snubbers will be functionally tested in the Spring 1983 outage. The inspector had no further questions on this item at this time.

- 82-82/03L This item is discussed in NRC Inspection Report 50-272/82-27. Sampling inspection by the inspector identified no similar failures to include fire detection instruments in surveillance procedures.

UNIT 2

- 82-109/01T
 - 82-111/01T
 - 82-112/01T
 - 82-113/01T
 - 82-119/01T
 - 82-120/01T
 - 82-122/01T
 - 82-128/01T
- These reports detail recurrences of small (approximately 1 gpm) service water leaks in containment as a result of erosion in the piping connections which join the service water header with the cooling coils. (Reference NRC Inspection Report 50-311/82-24). Consistent with previous practice, the licensee declared the unit inoperable, applied the appropriate Technical Specification Action Statement, and made repairs within the required time. Toward the end of the inspection period, a considerable reduction in the frequency of leaks was noted (average interval between leaks exceeded one week). In the first refueling outage, starting in mid-January 1983, all coils will be replaced using AL-6x tubes.

In addition, the licensee has performed a reliability analysis based on actual CFCU availability and will impose "Action Statements" more restrictive than Technical Specifications for future leaks. Surveillance testing frequency for Containment Spray pumps will also be increased.

- 82-114/03L A bottom-inserted pin fell out causing the Air Particle Detector (APD) ratchet cog to disconnect from the solenoid arm, rendering the monitor inoperable. Subsequent review determined that the pin was originally installed that way and could not be so inserted by station personnel due to interference. All technicians qualified to maintain radiation monitoring equipment were made aware of the potential problem.

- 82-115/03L This leak was found coming from a cast 1" pipe cap concealed under insulation in the service water supply to 2A Diesel Generator oil cooler. While the reason given for perforation of the cap is erosion due to silt, that cause is suspect due to the quiescent nature of flow expected in a dead-ended 1" pipe. The cap was replaced with a stainless steel cap. No similar failures have occurred and this event appears to have been caused by an isolated misapplication of material during construction.
- 82-117/03L This is a recurrence of service water valve fouling by a resident colony of American oysters. NRC Inspection Report 50-311/82-17 provides additional detail. The frequency of these events has decreased to less than one per month. By letter dated November 19, 1982 the licensee corrected minor errors in this LER.
- 82-118/03L The incorrect undervoltage setting on this disc-type relay was determined to be caused by drift in the adjustment of the relay stop lever. Position of this return travel stop will change the dropout setpoint of the relay. The setpoints are verified monthly by station personnel.
- 82-121/03L This event is detailed in Special NRC Inspection Report 50-311/82-28.
- 82-123/03L During routine daily surveillance of Containment Fan Coil Unit 21, low speed flow was observed to be 2400 gpm instead of the required minimum of 2500 gpm. Adjustment of the flow controller brought the flow within specification. The unit had been tested 26 hours earlier and achieved 2750 gpm flow. Due to the small divergence of flows involved, setpoint drift is a possible explanation. Given the possibility that an individual may have adjusted the control setting, the licensee's station training program will further emphasize the detrimental effects of such acts.
- 82-124/03L This event is discussed in NRC Inspection Report 50-311/82-26.

- 82-125/03L During the authorized one hour time interval for surveillance testing a logic failure was discovered in Solid State Protection Train B. The system was repaired by replacing a circuit board and retested while still in the one-hour test interval. The inspector's discussions with shift supervisors and operations management confirmed that stated policy would require entering the Technical Specification Action Statement as soon as a failure is discovered. The licensee stated that this will become documented policy as well.

The inspector had no further questions with respect to LERs reviewed.

5. Plant Vent Monitors

As a result of troubleshooting poor plant vent monitor response during purge operations, the following conditions were found: 1. The sample suction line to the APD from the plant vent was cut and capped at the stack resulting in the APD not receiving a sample from the plant vent when in the "plant vent" mode of operation; 2. A spring loaded vacuum relief valve, internal to the APD unit, was lifting at the normal system operating vacuum, rather than its specified setpoint, resulting in the APD receiving a diluted sample from the Unit 1 Containment when in the "containment" mode of operation. This also resulted in the system not sensing the low flow condition and was probably caused by the pump repeatedly being aligned to a dead leg of tubing and therefore lifting the relief valve repeatedly; and, 3. The sample suction line to the Radiation Monitoring System Channels 1R41A, B, and C had been connected to an open-ended length of tubing originating in the Electrical Penetration area resulting in this system receiving a diluted sample from the plant vent.

It was further determined that the system had been in the above configuration for the entire operating cycle from April 5, 1982 through October 16, 1982. The apparent cause of the problems is related to implementation of plant modification work and failure to provide proper direction of work and required functional testing on systems only partially modified.

During the Spring 1982 Unit 1 refueling outage, DCR 1-ED-0014, a plant modification to the Radiation Monitoring System, was started. This design change was to replace the "plant vent" mode of operation of the R-11A, 12A, and 12B process radiation monitors (APD system) with a new Victoreen monitoring system (R41A, B, and C). The APD system had the capability to sample either from containment or the plant vent, and provided automatic isolation (closure) of the Containment Pressure/Vacuum Relief valves upon high radiation detection.

The R-41 channels would replace the APD "plant vent" mode and also provide an isolation capability. During the modification work it was determined that the new system isolation function would not be completed. A Field Questionnaire resulted stating the sample suction line to the APD was not to be cut and capped so that an "operable isolation system" would still

remain. However, the work was already complete on the APD sample line and no explicit direction was provided in the work package to get the system back into the intended configuration, nor were any testing requirements stated in the package. The resulting work left the systems in the configuration found on October 18, 1982.

Technical Specification 3.3.3.1 requires the containment gaseous, particulate and iodine monitors (APD) operable to provide purge and pressure/vacuum relief isolation. The requirement also permits alignment of the monitors to the plant vent during purge and pressure/vacuum relief operations. In addition, if the monitors are not operable, the purge and pressure/vacuum relief valves are to be kept closed.

During the operating cycle, April 5 to October 16, 1982, the Unit 1 APD monitors were not operable when in the plant containment vent mode due to the capped sensing line and the pressure/vacuum relief valves were opened on 368 occasions for periods of 30 to 260 minutes to relieve containment pressure from about 0.2 psig to zero psig. The aggregate time open was 711 hours. These operations constitute noncompliance with a Limiting Condition for Operation (50-272/82-33-01).

In order to ascertain if any significant releases occurred during the period April to September 1982, the inspector reviewed the Unit 1 Waste Gas Decay Tank (WGDT) releases for the period. It was expected that WGDT contents normally represent the highest concentration of gaseous activity available for release, particularly in regard to noble gases.

In order to assure a conservative assessment of releases, decay was not considered in any of the releases. The instantaneous release rate permitted by Technical Specifications is 1.6 Ci/sec, Xe-133 equivalent. Relative to this limit, the highest release rates calculated for the period were 685.42 uCi/sec for a WGDT on September 13, 1982 and 4100 uCi/sec for a reactor building pressure release on August 1, 1982.

It was noted that the plant vent gross activity monitor (R16) was operable throughout this period with a conservative alarm setpoint. In the event of an actual high level release, the R16 monitor and the recently installed high range monitors would have displayed the fact and existing procedures would require manual isolation of containment. It was further noted that the observed values on the R16, R11A, R12A, and R12B monitors during containment pressure relief operation were reasonable and consistent. Accordingly, detector response was not questioned until the first purge at shutdown when the values were inconsistent. Finally, in the event of an accident, the valves would have been automatically closed by the containment isolation signal generated from either high containment pressure or the Safety Injection logic.

Particulate and iodine activity for this period was derived from weekly samples of the station vent. Results indicate 7.49 E-2 uCi/sec , I-131; and less than the lower limit of detectability (<LLD) for particulates. The instantaneous Technical Specification release rate limit for I-131 and particulates with half-lives greater than eight days is 6.66 uCi/sec .

In summary, though the licensee's 1R11A, 12A, 12B RMS was not functioning for the period, sufficient data from grab samples and other RMS devices (such as 1R16) exist to support a conclusion that effluent release Technical Specification limits were not exceeded.

6. Review of Plant Operations

A. Daily Inspection

The inspector toured the control room area to verify proper manning, access control, adherence to approved procedures, and compliance with LCOs. Instrumentation and recorder traces were observed. Status of control room annunciators was reviewed. Nuclear instrument panels and other reactor protective systems were examined. Control rod insertion limits were verified. Containment temperature and pressure indications were checked against Technical Specifications. Effluent monitors were reviewed for indications of releases. Panel indications for onsite/off-site emergency power sources were examined for automatic operability. During entry to and egress from the protected area, the inspector observed access control, security boundary integrity, search activities, escorting, badging, and availability of radiation monitoring equipment.

The inspector reviewed shift supervisor, control room, and field operator logs covering the entire inspection period. Sampling reviews were made of tagging requests, night orders, the jumper/bypass log, incident reports, and QA nonconformance reports. The inspector also observed several shift turnovers during the period.

The above daily inspections, which included backshifts, were made on November 10-12, 15-19, 21-24, 29, 30, December 1, 6-10, 13-17, 20, 21.

B. Plant Tours

The inspector toured accessible areas of the plant at least once per week. The tours included the control rooms, relay rooms, switchgear rooms, penetration areas, auxiliary building (elevations 122', 100', 84', 64', 55'), fuel handling building, turbine building, service water intake structure, plant perimeter and containment. During these tours, observations were made relative to equipment condition, fire hazards, fire protection, adherence to procedures, radiological control and conditions, housekeeping, security, tagging of equipment, ongoing maintenance and surveillance, and availability of redundant equipment.

Operability of the following Unit 2 ESF subsystems was verified by confirming flowpath valve positions, breaker alignment, instrumentation, and equipment condition: Containment Spray (both trains - Auxiliary Building), Auxiliary Feedwater (3 trains - Auxiliary Building and Penetrations), Safety Injection (both trains - Yard, Auxiliary Building and Penetrations), Service Water (both trains - Yard, Auxiliary Building).

Current tagouts of selected components were verified in effect as specified. Records of current surveillance for tank boron concentrations, shutdown margin and pump testing were reviewed. The inspector conducted a walkdown of accessible portions of Unit 2 Emergency Core Cooling Systems, to examine conformance with as-built drawings, line-ups, supports, instrumentation, electrical and controls cabinets and to confirm availability of the systems.

The following Limiting Conditions for Operation, not directly verifiable in the control room, were confirmed by field inspection or record review: service water availability to Auxiliary Feedwater (3.7.1.3), Fire barriers (3.7.11), Diesel fuel inventory (3.8.1.1), and CARDOX system availability (3.7.10.3).

7. Surveillance Testing

The inspector observed the performance of surveillance tests to confirm the following: testing was performed in accordance with adequate procedures; test instrumentation was calibrated; limiting conditions for operations were met; removal and restoration of the affected components were properly accomplished; test results conformed with Technical Specification and procedural requirements and were reviewed by personnel other than the individual performing the test; deficiencies noted were reviewed and appropriately resolved; personnel performing the surveillance activities were knowledgeable of the systems and the test procedures and were qualified to perform the tests.

These observations included:

- Technical Specification 4.5.4.2b, Daily Vital Heat Tracing Operability Surveillance
- 1 PD 16.2.011 Channel Functional Test: Source Range N31; Revision 1, with On-The-Spot Change 1; dated July 30, 1982
- 2 PD 2.6.028 Channel Functional Test: 2FT-512 Steam Generator 21 Steam Flow Protection Channel I; Revision 1; dated November 23, 1981
- 2 PD 2.6.064 Channel Functional Test: 2LT-548 Steam Generator 24 Level Protection Channel III; Revision 1; dated November 23, 1981
- 2 PD 2.6.069 Channel Functional Test: 2PT-948D Containment Pressure Protection Channel I; Revision 1; dated November 23, 1981

8. Maintenance Activities

The inspector observed portions of maintenance activities to determine that the work was conducted in accordance with approved procedures, regulatory guides, Technical Specifications, and industry codes or standards. The following items were considered during this review: limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing was performed prior to declaring that particular component as operable; activities were accomplished by qualified personnel; radiological controls were implemented; and fire prevention controls were implemented.

Activities observed included:

- Troubleshooting and Repairs to Rod Insertion Limit Monitor Upon Loss of Control Bank "B" Rod Position Indication;
- Repair of Tube Leaks in 22 Component Cooling Heat Exchanger;
- Replacement and Alignment of 22 Chill Water Compressor;
- Repairs to 12 Component Cooling Heat Exchanger (Details in Paragraph 9 of this Report); and,
- Repair and Testing of the Woodward Governor Valve on 23 Auxiliary Feed-water Pump Turbine.

9. Operating Events

UNIT 1

- a. Due to a planned outage of No. 12 Station Power Transformer at 10:30 p.m. on November 13, 1982, the automatic start logic for both diesel driven fire pumps was lost until 12:44 p.m. on November 14. An operator was stationed at the local controls to start the pumps if required. Since loss of automatic start logic renders both pumps inoperable as defined in Technical Specifications, the required 24-hour report was made to the NRC Duty Officer.
- b. On November 21, 1982, during a video fuel inspection, a scheduled refueling activity, 2 small holes were found in the clad on a single fuel pin. Details of this event are discussed in paragraph 10.

- c. On November 22, 1982, a thru-wall leak was discovered in service water piping associated with a component cooling water heat exchanger. This heat exchanger and associated service water piping were installed during the Spring 1982 refueling outage to replace a heat exchanger with chronic leakage problems.

subsequent radiography of welds in this service water piping had identified several significant corrosion problems. Of five field welds radiographed, all had defects. Of 14 shop welds radiographed, 8 had defects. The shop welds were made with 316 stainless steel (316 SS) inserts using 16-8-2 filler rod. The field welds were made with backing rings using E-308-16 filler rods. Piping base material is 316 SS. It is believed that the filler metal and base metal of each type weld are sufficiently dissimilar to promote corrosion cells when in contact with service water (Delaware River). The licensee has initiated repairs to the heat exchanger piping, replacing most of the pipe of 10 inch diameter and smaller and repairing larger pipe by grinding out welds and re-welding using an Inconel filler.

UNIT 2

- a. The unit experienced two service water leaks into containment from the Containment Fan Coil Units (CFCU) during the inspection period:

-- November 21; 25 CFCU Coil Leak

-- November 24; 23 CFCU Coil Leak

Both leaks were 1 gpm or less and were immediately isolated and repaired. Also, both leaks were reported to the NRC Duty Officer in accordance with IE Bulletin 80-24.

The licensee intends to replace the CFCU cooling coils with a new material less subject to silt erosion, which appears to be the cause of the leaks, during the upcoming refueling outage scheduled in January 1983.

- b. The plant tripped from 58% power at 4:10 a.m. on November 19, 1982, due to low level in Steam Generator 24 following loss of both operating feedwater pumps. At the time, two condensate pumps were in service and the third was being aligned for operation following strainer cleaning. The operator failed to completely vent and fill the pump before opening the suction valve. The resulting air slug caused simultaneous trips of the feedwater pumps on low suction pressure. The reactor was made critical at 6:15 a.m.

10. Refueling Activities

The reactor fuel shuffle was completed during this inspection period. To preclude grid strap interaction problems, the core was entirely offloaded to the spent fuel pool and then reloaded with 52 new assemblies. Off-load was conducted between November 18 and 21, 1982. The core was re-assembled between November 28 and December 1, 1982.

Inspection activities included verification of Technical Specification requirements for fuel handling, observation of several shifts during fuel moves, verification of periodic testing, containment integrity, house-keeping, procedure adherence, tool control, and adequate staffing during refueling operations. Fuel handling was conducted by Westinghouse personnel under the direction of a licensee supervisor qualified as an SRO.

At the conclusion of this inspection period, fuel handling was complete and the reactor pressure vessel head was in place with bolt tensioning completed.

During a video fuel inspection on November 21, 1982, two small holes were found in the clad on a pin of fuel assembly D-20, located at core location L-3 during the operating cycle. The larger of the two was approximately 3/8 inch diameter and located within an inch of grid strap 2. The second hole was approximately 1/4 inch diameter and located within an inch of grid strap 6. Both holes appeared to be clad bursts. The pin was located on the assembly exterior, face 2. The assembly was scheduled to be reused during the upcoming operating cycle but was replaced with a similar assembly. Assembly D-20 had a calculated burrup of about 23,500 MWD/MTU. The licensee inspected additional "D" assemblies with similar exposure histories and also the opposing face of the adjacent assembly with no additional indications of clad failure found. The Reactor Coolant specific activity at the end of cycle was about 1.0 E-1 micro-Curies/gram Dose Equivalent I-131 which was 10% of the allowable Technical Specification limit and had not significantly changed from activity at the beginning of the cycle.

11. Unresolved Items

There were no unresolved items noted during this inspection.

12. Exit Interview

At periodic intervals during the course of this inspection, meetings were held with senior facility management to discuss inspection scope and findings.