U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117
Dates:	April 25 through June 5, 1999
Inspectors:	R. Gibbs, Acting Senior Resident Inspector R. Caldwell, Resident Inspector, Farley (Section E7.1) K. Coyne, Project Engineer (Sections O2.1, O4.1, and M1.1) G. McCoy, Resident Inspector, Surry (Section E8.1)
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Enclosure

EXECUTIVE SUMMARY

North Anna Power Station, Units 1 & 2
NRC Inspection Report Nos. 50-338/99-03, 50-339/99-03

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a six-week period of resident inspection; in addition it includes the results of announced inspections by a project engineer and two visiting resident inspectors.

Operations

- Plant operators properly reduced load to 60% to support modifications to the main generator's bus duct cooling system. Procedure usage, annunciator response, communications, and management oversight of the evolution were appropriate. The unit properly responded to the load decrease and no unusual secondary plant equipment performance issues were identified (Section O1.2).

- Operator response to a transient caused by a malfunction of the pressurizer pressure master controller was good. The operators terminated the transient by immediately closing the power operated relief valve (PORV) and the pressurizer spray valves and placing the pressurizer master pressure controller in manual. Applicable actions required by Technical Specification 3.4.3.2, "Safety and Relief Valves - Operating," were properly executed (Section O1.3).

- The boron injection flow path from the A boric acid tank via the A boric acid transfer pump was properly aligned for operation. System material condition and housekeeping in the vicinity of system components were good. No conditions were identified that would have prevented boron injection to the reactor coolant system via this flow path (Section O2.1).

- Material condition of several supports associated with the auxiliary service water system was poor due to corrosion caused by ineffective sump pump operation. All valves were in their required position; however, three component labeling issues were identified. There was mild surface rusting of carbon steel components, none affecting component integrity. Housekeeping issues identified included inoperable lighting, wet flooring, groundwater inleakage and the presence of rust scale and smaller trash items (Section O2.2).

- A non-cited violation was identified for the failure to maintain the local control switch for the Unit 1 control room emergency fan in the required "Lockout" position (Section O8.1).

Maintenance

- A routine periodic test for Unit 2 engineered safety feature actuation system slave relays was properly performed by knowledgeable workers. The test was approved by station management and technical specifications requirements were satisfied (Section M1.1).

- Maintenance on the 1H emergency diesel generator was properly performed by knowledgeable workers who followed their maintenance procedures. Fire protection program implementation was identified as an area of needed improvement. Several problems involving fire watch requirements and control and storage of combustible materials occurred during maintenance on the 1H emergency diesel generator (Section M1.2).

Engineering

- Unit 1 core flux map activities were properly performed by a knowledgeable reactor engineer. The engineer demonstrated a thorough understanding of operation of the incore detector system and associated Technical Specifications (TSs). TS 3.2.2 and 3.3.3.2 were satisfied during the flux map activities (Section E1.1).

- Based on a review of two deficiency reports on the auxiliary feedwater and emergency diesel generator systems, the licensee corrected these problems in a timely manner commensurate with their risk significance (Section E7.1).

Plant Support

- An off-hours emergency plan drill was properly performed. Operators exhibited command and control, properly classified the event, and notified off-site agencies during the initial phases of the drill. The initial call-out of responders was effective as evidenced by their timely response to the site. Information flow between the various control centers was evident by the proper assignment of drill priorities (Section P1.1).

- Material condition of the self-contained breathing apparatus used for the plant's fire brigade was good. There was sufficient breathing air onsite and fire protection equipment was properly staged to accommodate the fire brigade's needs (Section F2.1).

Report Details

Summary of Plant Status

Unit 1 began the inspection period at 100% power. Power was reduced to 60% on May 15 to support modifications to the main generator bus duct cooling system. Power was returned to 100% on May 15. Power was reduced to 84% on June 1 to accommodate main condenser tube repairs. Power was returned to 100% on June 4 and remained there for the remainder of the inspection period.

Unit 2 operated at or near full power for the entire inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Daily Plant Status Reviews (71707, 40500)

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness, and procedure adherence. The inspectors attended plant status meetings to maintain awareness of facility operations and reviewed operator logs to verify operational safety and compliance with Technical Specifications (TSs). Instrumentation and safety system lineups were periodically reviewed to assess operability. Frequent plant tours were performed to observe equipment status and housekeeping conditions. Deviation reports (DRs) were reviewed to ensure that potential safety concerns were properly reported and resolved. The inspectors found that daily operations were generally conducted in accordance with regulatory requirements.

O1.2 Unit 1 Power Reduction

a. Inspection Scope (71707)

On May 15, the inspectors observed control room activities during a planned power reduction to 60%.

b. Observations and Findings

The power reduction was performed to support modifications to the main generator bus duct cooling system to provide chilled water as an alternate cooling medium. The bearing cooling system is the normal cooling water source. The plant had recently experienced higher than normal bus duct cooling temperatures due to the recent increase in generator megawatts, reduced bus duct cooling air flow, and the onset of warmer outside temperatures. The inspectors verified that the operating procedure was properly followed during the power reduction. There were three reactor operators (ROs) assigned to the control board who carefully monitored plant operation. The inspectors verified that annunciator response and crew communications met licensee expectations. Management oversight was appropriate. By checking multiple indicators and walking down selected equipment in the secondary plant, the inspectors verified that the unit properly responded to the power reduction. The inspectors verified that the power

reduction did not exceed 15% in a one hour period which would have required a chemistry sample of the reactor coolant system in accordance with TS 3.4.8, "Specific Activity." The inspectors discussed with the RO the expected xenon transient which occurred due to the power reduction. The RO demonstrated a thorough understanding of xenon effects on core reactivity.

c. Conclusions

Plant operators properly reduced load to 60% to support modifications to the main generator's bus duct cooling system. Procedure usage, annunciator response, communications, and management oversight of the evolution were appropriate. The unit properly responded to the load decrease and no unusual secondary plant equipment performance issues were identified.

O1.3 Controller Malfunction Caused Opening of Unit 2 Power Operated Relief Valve (PORV)

a. Inspection Scope (71707)

The inspectors reviewed circumstances associated with a malfunction of the pressurizer pressure master controller and the subsequent opening of PORV 2-RC-PCV-2455C and the pressurizer spray valves.

b. Observations and Findings

On May 14, PORV 2-RC PCV-2455C and the pressurizer spray valves opened due to a malfunction of the pressurizer pressure master controller. The RO immediately placed the PORV and pressurizer spray valve control switches in the closed position, and placed the master controller in manual in accordance with the abnormal procedure. Reactor coolant system (RCS) pressure decreased from the normal value of 2235 psig to about 2150 psig during the event. The licensee restored RCS pressure to greater than 2205 psig within four minutes which satisfied the two hour action statement of TS 3.2.5, "DNB Parameters." In addition, TS 3.4.3.2, "Safety and Relief Valves-Operating," action A.3 was entered due to the malfunction in the PORV automatic control system. This action required the licensee to place the inoperable PORV to manual within one hour. The inspectors checked the RCS pressure chart recorder and reviewed the operating log to ensure that these requirements were satisfied. The licensee initiated DR N-99-1117 to determine the cause of the controller failure and address appropriate corrective actions.

After the operators stabilized pressurizer pressure, the pressurizer relief tank (PRT) pressure and level and the PORV relief line temperature remained higher than normal. The increased temperature was indicative of RCS leakage past the PORV's valve seat. The licensee entered TS 3.4.3.2, action A.1 and closed the PORV's block valve, 2-RC-MOV-2536. This TS action required the block valve to be closed within one hour once it was determined the PORV was inoperable due to excessive seat leakage. The licensee initiated DR N-99-1130 for this condition. The inspectors verified that TS 3.4.3.2 requirements were met by a review of the operating log. Following closure of the PORV block valve, PORV relief line temperature remained higher than normal, indicating the presence of some seat leakage past the shut PORV and associated block valve. The

inspectors noted that identified RCS leakage, which increased by about 0.02 gpm, was still well below the TS limit of 10 gpm for identified RCS leakage.

The licensee replaced control cards for the master controller, monitored the controller operation, and subsequently returned the PORV control switch and the pressurizer pressure master controller to the automatic position on May 17. TS 3.4.3.2, action A.3 was cleared at that time. The block valve and the PORV were cycled several times during the remainder of the inspection period in an attempt to better seat both valves. At the end of the inspection period the block valve remained closed with the PORV closed in automatic control. The inspectors confirmed that this configuration was allowed by the TS. The licensee plans to perform maintenance on the PORV during the September 1999 refueling outage.

c. Conclusions

Operator response to a transient caused by a malfunction of the pressurizer pressure master controller was good. The operators terminated the transient by immediately closing the PORV and the pressurizer spray valves and placing the pressurizer master pressure controller in manual. Applicable actions required by TS 3.4.3.2, "Safety and Relief Valves - Operating," were properly executed.

O2 Operational Status of Facilities and Equipment

O2.1 Boron Injection Flow Path General Walkdown

a. Inspection Scope (71707)

On April 27 and 28, the inspectors performed a general walkdown of accessible portions of the chemical and volume control system associated with the Unit 1 RCS boron injection path from A boric acid tank via the A boric acid transfer pump.

b. Observations and Findings

At the time of the walkdown, the A boric acid tank was aligned to the Unit 1 reactor makeup system via the A boric acid transfer pump. The inspectors verified that system configuration and alignment were in accordance with approved plant drawings and applicable operating procedures. The inspectors noted little evidence of boric acid crystal buildup due to system leakage. In general, housekeeping and system material conditions were good. Auxiliary building lighting provided good illumination of system components. The inspectors forwarded several minor discrepancies, such as piping insulation damage and inconsistencies between installed heat tracing and heat tracing shown on system drawings, to the licensee for resolution. The inspectors observed paint on the stem of valve 1-CH-HCV-1110, "Boric Acid TD A Recirc Valve Cont," that could potentially interfere with valve movement. The inspectors verified that 1-CH-HCV-1110 was throttled to the position required by plant procedures and the licensee initiated DR N-99-1000 to address appropriate corrective actions for the valve. The inspectors verified that TS surveillance requirements (SR) for boric acid tank boron concentration (SR 4.1.2.8.a.1) and boron injection flow path alignment (SR 4.1.2.2.b) were met. The

inspectors identified no conditions that would have prevented boron injection to the RCS.

c. Conclusions

The boron injection flow path from the A boric acid tank via the A boric acid transfer pump was properly aligned for operation. System material condition and housekeeping in the vicinity of system components were good. No conditions were identified that would have prevented boron injection to the reactor coolant system via this flow path.

O2.2 Auxiliary Service Water (ASW) System General Walkdown

a. Inspection Scope (71707, 37551)

On May 11 and 13, the inspectors walked down accessible portions of the ASW system with the system engineer (ASW is a safety-related backup system for the main service water system). The areas examined were the intake structure ASW pump discharge valve pit and the turbine building service water (TBSW) valve pit. The pits are confined spaces requiring special access controls and therefore are not frequently entered during normal plant operations.

b. Observations and Findings

The inspectors compared approved plant drawings and operating procedures to observed component positioning and labeling. The inspectors also verified through a review of plant drawings that the required piping supports were in place for both pits. All components were in their required positions. The inspectors found two components with temporary identification tags which were barely legible. The component identification label on one temperature element was inconsistent with plant drawings. These items were discussed with the licensee who took appropriate corrective actions.

Although housekeeping and material condition of components in the ASW pump discharge valve pit was adequate, the inspectors noted the following deficiencies in this area:

- Both valve pit general area lights were burned out.
- At the time of the inspection the floor was dry; however, the presence of silt like dirt on the floor was evidence that the pit sump had overflowed. It appeared that water had accumulated to no more than one inch above the floor.
- Small trash items and rust scale had accumulated on the pit floor.
- Carbon steel components (e.g., piping flange connection nuts and bolts) were experiencing varying degrees of mild surface rust. The inspectors discussed the rust with engineering who stated that structural integrity was not affected. Based on the observed conditions the inspectors considered engineering's conclusion to be reasonable.

- Concrete blocks which cover the pit were not sealed. The inspectors discussed with the licensee that this may have led to increased moisture (and subsequent corrosion) in the pit due to rainwater in-leakage.

The inspectors discussed these deficiencies with the licensee who at the end of the inspection had taken actions to improve the ASW pump discharge valve pit conditions.

The inspectors noted the following conditions in the TBSW valve pit:

- Wall moisture and wet flooring indicated the presence of groundwater in-leakage into the pit. No standing water was observed, but there was evidence that the pit sump pump had not operated properly in the past. At the time of the inspection the sump pump was working properly.

- Corrosion, more severe than that found in the ASW pump discharge valve pit, was present on several supports. The licensee initiated DRs N-99-1264 and -1265 to address the corrosion issues. The licensee evaluated the corrosion issues and determined that ASW operability was not affected. The inspectors reviewed the operability determination and discussed it with a structural engineer. The inspectors considered the licensee's conclusion to be reasonable because there were additional supports within a five feet span for the affected equipment which were in an acceptable condition.

- The inspectors identified a spring hanger for one of the service water lines in the TBSW valve pit that was not properly loaded. The licensee initiated DR N-99-1123 for this condition. The licensee initiated an engineering transmittal (ET) which concluded that operability of the piping was unaffected. The inspectors reviewed the ET and determined its conclusions were reasonable based on the results of a calculation that supported continued operability. The calculation considered the nearby concrete walls, which provided vertical and horizontal piping support, and the location of the piping which was below ground level where seismic acceleration is reduced.

Based on the presence of support corrosion, the improper loading of a spring hanger, and the indication of water intrusion, the inspectors considered the housekeeping and material condition of the TBSW valve pit to be poor. At the end of the inspection period the licensee had taken appropriate actions to significantly improve pit conditions.

The licensee performed category I Root Cause Evaluation 98-04, "Unit 2 Pipe Supports," to address issues and violations identified in NRC Inspection Report Nos. 50-338, 339/98-05. A corrective action contained in the root cause evaluation was to identify other areas in the plant which are not readily accessible and ensure that periodic material condition walkdowns be performed. The two valve pits discussed above had been included on the initial list, dated January 22, 1999, of areas to be walked down. At the time of the inspection, the licensee had not performed walkdowns of these two areas. Additional actions to determine the extent of further corrective actions were scheduled to be completed by July 1, 1999. Subsequent to the report period, on July 1, 1999, the inspectors reviewed the status of the further corrective actions. Approximately two thirds of the 61 areas, which were designated as not readily accessible areas, have

been inspected. The licensee was in the progress of developing a schedule for inspection of the remaining areas and a schedule to write or revise existing procedures to conduct future periodic inspections/walkdowns of these 61 areas. The inspectors considered that the corrective action program was addressing the material condition issue.

c. Conclusions

Material condition of several supports associated with the auxiliary service water system was poor due to corrosion caused by ineffective sump pump operation. All valves were in their required position; however, three component labeling issues were identified. There was mild surface rusting of carbon steel components, none affecting component integrity. Housekeeping issues identified included inoperable lighting, wet flooring, groundwater inleakage and the presence of rust scale and smaller trash items.

O4 Operator Knowledge and Performance

O4.1 Accompanying Auxiliary Operator During Routine Rounds (71707, 71750)

On April 29, the inspectors toured portions of the auxiliary building with a non-licensed operator during routine rounds. The inspectors evaluated the operator's familiarity with plant systems and their status, thoroughness of rounds, and radiological work practices. The operator carried procedure 1-LOG-6D, "Auxiliary Building," followed applicable procedural special instructions, checked component work request tags, used proper radiological work practices, and promptly communicated problems to the control room. Housekeeping conditions in the auxiliary building were good as evidenced by proper lighting, proper storage of equipment, and general cleanliness. The operator conducted rounds in a thorough and professional manner and was knowledgeable of plant systems.

O8 Miscellaneous Operations Issues (92700)

O8.1 (Closed) Licensee Event Report (LER) 50-338, 339/99004-00: switch misposition for supply dampers to control room emergency fan. On April 13, 1999, while Unit 1 was in mode 1, the licensee discovered the local control switch for the Unit 1 control room emergency fan (i.e., 42 fan) in the "Normal" versus the required "Lockout" position. In the "Normal" position the fan's intake dampers, which take suction from outside the control room pressure boundary envelope, open when the fan automatically starts in the event of a safety injection (SI) signal. The dampers are required to remain closed during the first hour after the SI signal to ensure the air in the control room envelope is recirculated and filtered though the system's charcoal filter and that outside air is not drawn into the control room. The purpose of this operation is to limit radiological dose to control room operators.

The licensee immediately entered TS 3.7.7.1, "Control Room Emergency Habitability Systems," and returned the switch to the "Lockout" position. The licensee was unable to determine how the switch became mispositioned, but speculated it was bumped during work that had occurred in the immediate area of the switch. The licensee's investigation

determined that the last time the switch was known to be in the correct position was on March 6, 1999, when a routine surveillance test was performed. Operators who performed that test recalled that the damper did not cycle during fan operation which indicated the switch was positioned correctly. The inspectors reviewed operating logs, completed test procedures, and discussed the event with several plant personnel and concluded the licensee's conclusions were plausible.

The inspectors reviewed corrective actions for the switch misposition. These included a revision to the PT to ensure the switch is in the correct position before the test is run, installation of protective covers around the switch to prevent inadvertent contact, and installation of placards at the switch locations to alert personnel of the required switch position. The inspectors considered these actions to be comprehensive.

Operating procedure (OP) 1-OP-21.7, "Main Control and Relay Room Emergency Ventilation Operation," Revision 8, controls the position of the switch. During operating modes 1 through 4 the required position is "Lockout." Failure of the licensee to maintain the switch in the "Lockout" position is a violation of TS 6.8.1, "Procedures and Programs." This Severity Level IV violation is being treated as a Non-Cited Violation (NCV) consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as DR N-99-873. This item is identified as 50-338, 339/99003-01.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Periodic Tests (PT) Observations

a. Inspection Scope (61726)

The inspectors observed the performance of 2-PT-36.5.3A, "Solid State Protection System Output Slave Relay Test (Train A)," Revision 12.

b. Observations and Findings

The inspectors verified that the test was included on the management approved plan of the day. The inspectors checked selected components for their pre-test and post-test positions to ensure they were properly positioned and no discrepancies were identified. The inspectors examined test instruments to ensure the instruments had been calibrated and their calibration due date had not expired. The inspectors verified that the test acceptance criteria was consist with TS requirements and that applicable TS requirements were satisfied. The inspectors reviewed selected test data to ensure component performance was satisfactory. During test performance, the inspectors evaluated procedural adherence, communications, and worker knowledge of the assigned activities. The inspectors found that personnel communicated effectively, employed proper self-checking techniques, and used satisfactory testing work practices.

c. Conclusions

A routine periodic test for Unit 2 engineered safety feature actuation system slave relays was properly performed by knowledgeable workers. The test was approved by station management and technical specifications requirements were satisfied.

M1.2 1H Emergency Diesel Generator (EDG) Maintenance Observations

a. Inspection Scope (62707)

The inspectors observed numerous maintenance activities associated with the 1H EDG during its 24-month and five year inspections.

b. Observations and Findings

On numerous occasions during the inspection period while the 1H EDG was tagged out for major maintenance, the inspectors observed a variety of maintenance activities. These activities included the following:

- exhaust piping gasket replacement
- repair of pinhole leak at oil sump weld
- fuel injector pump installation
- lube oil cooler inspection
- starting air distributor inspection
- cooling fan blade inspection

The inspectors found that maintenance procedures were present at the job, properly approved and adhered to by the workers. The inspectors observed several quality control (QC) inspections that were performed as required. The inspectors checked training records of selected QC inspectors and no problems were found. Workers were knowledgeable of their assignments. Through the review of training documentation and discussions with supervision, the inspectors determined that the workers were properly trained. The inspectors noted that support from component engineering was effective. The engineer was present at the work site and was available to address issues. The inspectors checked foreign material exclusion (FME) practices on numerous occasions and generally found them to be acceptable. The inspectors identified several minor FME issues which were immediately corrected by the licensee.

The inspectors examined housekeeping conditions. Area lighting was excellent. In general, the area around the EDG was kept clear of tools and other materials. The storage of EDG parts was orderly. Oily rags were generally stored in approved containers. The inspectors, however, were concerned about implementation of the plant's fire protection program. Several problems in the area of fire protection were identified and are discussed below.

- On May 2, the licensee discovered that operators misinterpreted fire watch requirements for the fire door leading into the EDG room. The licensee initiated DR N-99-1009 for this condition.

- On May 5, the inspectors identified an unattended five gallon bucket that contained about two gallons of engine oil. The oil, which the licensee considered to be a combustible liquid, had been stored in the EDG room since the previous day. The inspectors pointed this out to the licensee who took immediate corrective actions and initiated DR N-99-1086.

- On May 5, a very small fire occurred near the EDG oil sump area. The fire was immediately extinguished by the fire watch. At the time of the fire, the oil sump was empty which significantly reduced the potential effects of the fire. Workers had cleaned engine oil from the exterior of the oil sump housing by using a flammable aerosol can of "engine cleaner." After the cleaner was used and removed, an air sample was taken to check for flammability; however, all areas were not checked. When a torch used for welding preheating was lit, the accumulated flammable gases from the cleaner ignited. This example demonstrated a lack of attention to detail for controlling flammable material in areas with ignition sources. The licensee initiated DR N-99-1043 for this condition.

c. Conclusions

Maintenance on the 1H emergency diesel generator was properly performed by knowledgeable workers who followed their maintenance procedures. Fire protection program implementation was identified as an area of needed improvement. Several problems involving fire watch requirements and control and storage of combustible materials occurred during maintenance on the 1H emergency diesel generator.

III. Engineering

E1 Conduct of Engineering

E1.1 Review of Incore Flux Map Activities

a. Inspection Scope (37551)

The inspectors observed portions of a Unit 1 incore flux map and discussed operation of the incore detector system and the associated TS with the reactor engineer.

b. Observations and Findings

On May 13 the inspectors observed portions of a Unit 1 flux map. The flux map is required by TS 3.2.2, "Heat Flux Hot Channel Factor - FQ(Z)," to be performed at least once every 31 effective full power days. The inspectors observed incore flux data retrieval and discussed operation of the incore flux detectors with the reactor engineer. The engineer demonstrated a thorough understanding of the evolution and was well aware of potential problems that could occur if the system was improperly operated. Misoperation of the five and ten-path rotary transfer devices, which directs the detectors through specific areas in the core, was specifically discussed.

The inspectors reviewed the completed power distribution summary sheet for the flux map and summary sheets for the previous five months to determine if TS requirements for heat flux hot channel factors and enthalpy rise hot channel factors were satisfied. No discrepancies were identified during this review. The inspectors also confirmed that a minimum of 75% of the detector thimbles were used for the test which met TS 3.3.3.2, "Movable Incore Detectors," requirements. The inspectors discussed with the reactor engineer TS 3.2.2 and 3.3.3.2 and their bases to assess the engineer's overall understanding of the TS. The inspectors found that the engineer was knowledgeable. The engineer also demonstrated in the control room that the alarm setpoints for axial flux distribution (AFD) were properly loaded into the plant's computer.

c. Conclusions

Unit 1 core flux map activities were properly performed by a knowledgeable reactor engineer. The engineer demonstrated a thorough understanding of operation of the incore detector system and associated Technical Specifications (TSs). TS 3.2.2 and 3.3.3.2 were satisfied during the flux map activities.

E7.1 Engineering Corrective Action Review

a. Inspection Scope (37751, 40500)

The inspectors conducted a detailed review of two engineering DRs on risk significant equipment. DR N-98-3593 concerned a failed in-service inspection (ISI) of a main steam check valve to the Unit 2 turbine-driven auxiliary feedwater pump and DR N-99-0838 documented a failed start of the 2H EDG.

b. Observations and Findings

On November 10, 1998, auxiliary feedwater (AFW) turbine driven pump steam supply check valve 2-MS-119 failed its quarterly performance test. The performance test is intended to demonstrate that AFW steam supply check valves backseat properly and do not leak significantly. The licensee performed a maintenance rule (MR) evaluation to determine the cause of the failure. The evaluation indicated that this valve and similar ones often "chatter" but have low failure rates. The valve was repaired by lapping the seat and subsequently passed its performance test. The check valve failure placed the AFW in MR category (a)(1) because the valve repair caused the system to exceed its performance criteria for unavailability.

The inspectors reviewed the MR evaluation, walked down the system, reviewed applicable procedures and drawings, and interviewed numerous personnel. The inspectors considered the evaluation to be adequate, although several minor documentation errors were identified and discussed with the licensee. The corrective actions were appropriate and timely. The MR goals for monitoring the AFW system while in the (a)(1) status were reviewed and considered adequate. Although the ISI plan for this valve was satisfactory, data from performance testing was not trended to predict future valve performance. A review of quarterly performance test data for the last four years indicated, in general, that the backleakage through 2-MS-119 was substantially higher than the backleakage through the other two similar AFW pump steam supply

check valves. The review of the data also indicated an unusually low leak rate occurred during the February 1996 performance test, and no steps were taken to validate the data or redo the test. This observation was discussed with plant management.

On April 7, 1999, the 2H EDG failed to start and DR N-99-0838 was initiated. The start failure occurred during a scheduled maintenance run after preventative maintenance. The EDG indicated approximately 80 rpm as it was rolled with air and after seven seconds it tripped. The licensee determined the cause to be a seized fuel pump in the zero fuel position which was caused by a mispositioned fuel rack. The rack was believed to have been inadvertently bumped during the maintenance. The mispositioned fuel rack allowed the fuel pump to be over-ranged in the shut direction. This caused the fuel pump to seize. The licensee did not consider this occurrence to be a maintenance preventable functional failure (MPFF) because the failure occurred during the post-maintenance test. The fuel pump was replaced, the maintenance run completed satisfactorily, and procedure changes to ensure the initial correct positioning of the fuel racks were completed.

The inspectors reviewed the MR evaluation, walked down the system, reviewed applicable procedures, and interviewed the system engineer and MR personnel. The inspectors considered the MR evaluation to be adequate. The corrective actions were appropriate and timely. The MR determination that the failure was not an MPFF was accurate.

During the DR reviews, it was noted that the expectations/requirements for determining if a DR is a "repeat" in accordance with the "Corrective Action Assignment and Response for Deviation Reports" form are not specified in the applicable procedures. For this failure of the 2H EDG, only previous 2H EDG DRs were examined to determine if a "repeat" occurred. The inspectors discussed with licensee personnel that it might have been more appropriate to include the other EDG's DRs in the review scope. The licensee indicated that the DR coordinator's knowledge is utilized to implement an adequate scope of review and the DR assessment review team's review would also be an opportunity to address repetitive problems.

c. Conclusions

Based on a review of two DRs on the auxiliary feedwater and emergency diesel generator systems, the licensee corrected these problems in a timely manner commensurate with their risk significance.

E8 Miscellaneous Engineering Issues

E8.1 Year 2000 (Y2K) Readiness Program Review (TI 2515/141)

The staff conducted an abbreviated review of Y2K activities and documentation using Temporary Instruction (TI) 2515/141, "Review of Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants." The review addressed aspects of Y2K management planning, documentation, implementation planning, initial assessment, detailed assessment, remediation activities, Y2K testing and validation, notification

activities, and contingency planning. The reviewers used NEI/NUSMG 97-07, "Nuclear Utility Year 2000 Readiness," and NEI/NUSMG 98-07, "Nuclear Utility Year 2000 Readiness Contingency Planning," as the primary references for this review.

During the review, the licensee stated that the Y2K Readiness Project assessment and remediation activities were 95% complete and contingency planning was 92% complete. Both programs were on target to be completed by their scheduled due dates.

A review of the following systems was performed:

- ATWS Mitigation System Actuation Circuitry (AMSAC)
- High Capacity Steam Generator Blowdown System
- Steam Generator Blowdown Radiation Monitor
- Emergency Response Facility Computer
- P-250 Plant Computer
- Plant Security Computer

Conclusions regarding the Y2K readiness of the facility are not included in this report. The results of this review will be combined with the results of reviews of other licensees in a NUREG publication.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls (71750)

On numerous occasions during the inspection period, the inspectors reviewed radiation protection (RP) practices including radiation control area entries and exist, survey results, and radiological area material conditions. No discrepancies were noted. The inspectors determined that RP practices were proper.

P1 Conduct of EP Activities

P1.1 Emergency Preparedness (EP) Drill Observations

a. Inspection Scope (71750)

On May 18 the inspectors observed an off-hours EP drill. The inspectors observed activities in the technical support center (TSC), operations support center (OSC), local emergency operations facility (LEOF), and the control room simulator. The inspectors also attended a post drill critique in the TSC.

b. Observations and Findings

Plant operators in the simulator effectively responded to the drill. There was proper command and control which ensured priorities were managed as needed. Communications between the operating crew and offsite agencies met drill objectives. The emergency action level was properly classified. In particular, the inspectors verified

timeliness of communications to offsite agencies. The inspectors also verified that selected information provided to offsite agencies was accurate.

The security organization effectively accounted for individuals at the plant once the simulated alert was declared. In addition, the system used to inform responders (i.e., Community Alert Network) was effectively implemented. The initial call outs were completed in about 15 minutes.

Manning of the TSC met drill objectives. The inspectors noted however that early in the event the TSC was crowded which led to an increase in the noise levels and overall activity level. The station emergency manager displayed good command and control by reducing the number of unnecessary individuals in the area. This action significantly improved the TSC environment. The inspectors observed that information flow from the simulator to the TSC and vice versa was good even with the safety parameter display system not in service. The inspectors noted that the licensee used dedicated communicators between the different control areas.

The inspectors discussed with selected personnel the status of equipment needed to respond to the drill. Equipment such as copies, fax machines, and telephones worked well. One drill participant who was associated with dose assessment noted that the computer code used to perform this function was slower than normal. At the end of the inspection period, the licensee was investigating the cause.

The inspectors attended the post drill critique in the TSC. The directors of the various work groups discussed their overall perception of their performance and other related issues. The overall response from the directors was positive. The operations and maintenance directors specifically commented on the significant improvement in efforts by the damage control team compared with previous drills.

c. Conclusions

An off-hours emergency plan drill was properly performed. Operators exhibited command and control, properly classified the event, and notified off-site agencies during the initial phases of the drill. The initial call-out of responders was effective as evidenced by their timely response to the site. Information flow between the various control centers was evident by the proper assignment of drill priorities.

S1 Conduct of Security and Safeguards Activities (71750)

On numerous occasions during the inspection period, the inspectors performed walkdowns of the protected area perimeter to assess security and general barrier conditions. The inspectors also verified that safeguards information was properly accounted for and controlled. The inspectors observed activities in the central and secondary alarm stations and checked other security posts for proper manning. The inspectors toured the security diesel and the security system uninterruptible power supply areas. During these tours the inspectors did not identify any problems.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Self-Contained Breathing Apparatus (SCBA) Inspection (71750)

On May 6, the inspectors accompanied a fire protection specialist during the performance of the monthly PT of SCBAs which are used by the fire brigade. The inspectors verified that selected SCBAs were in good condition as indicated by sufficient bottle air pressure, proper regulator operation (including the low air pressure alarm feature), overall material condition of the masks and associated air hose, and the required five year bottle inspection. The inspectors ensured that sufficient SCBAs were available for the fire brigade and that an adequate number of spare bottles were available onsite. The inspectors were advised that a bottle fill station was onsite in the event that extended breathing air was needed. The inspectors toured the breathing air station and noted numerous bottles were available. On May 10, the inspectors toured the fire brigade staging area which is used to store additional air bottles and fire protection equipment. The inspectors found three bottles with air pressure slightly less than 1800 psig and two bottles with an expired inspection date by one month. The licensee immediately corrected these minor deficiencies and initiated DR N-99-1091. The PT for the fire brigade staging area had not yet been performed for the current month.

Material condition of the SCBAs used for the plant's fire brigade was good. There was sufficient breathing air onsite and fire protection equipment was properly staged to accommodate the fire brigade's needs.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 10, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Christian, Vice President, Nuclear Operations
B. Foster, Superintendent Station Engineering
C. Funderburk, Manager, Station Safety and Licensing
J. Hayes, Acting Manager, Station Operations and Maintenance
L. Jones, Acting Superintendent, Radiological Protection
P. Kemp, Supervisor, Licensing
L. Lane, Superintendent, Operations
T. Maddy, Superintendent, Security
W. Matthews, Site Vice President
H. Royal, Superintendent, Nuclear Training
D. Schappell, Superintendent, Site Services
R. Shears, Superintendent, Maintenance
A. Stafford, Acting Director, Nuclear Oversight

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92700:	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
TI 2515/141:	Review of Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants

ITEMS OPENED AND CLOSED

Opened

50-338, 339/990003-01	NCV	Switch mispositioned for supply dampers to control room emergency fan (Section 08.1).

Closed

50-338, 339/99004-00	LER	Switch misposition for supply dampers to control room emergency fan (Section 08.1).
50-338, 339/99003-01	NCV	Switch mispositioned for supply dampers to control room emergency fan (Section 08.1).