



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-338/95-20 and 50-339/95-20

Licensee: Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: October 22 through November 18, 1995

Lead Inspector:

Alpha Inger for
R. McWhorter, Senior Resident Inspector 12/8/95
Date Signed

Inspector: D. R. Taylor

Approved by: G. A. Belisle
G. A. Belisle, Chief 12/11/95
Date Signed
Reactor Projects Branch 5
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted on site in the areas of plant status, prompt on-site response to events, plant operations, maintenance observations, surveillance observations, on-site engineering, plant support activities, evaluation of licensee self-assessment activities, and previous inspection item follow up. Licensee backshift activities were inspected on October 22, 23, 30, and November 2, 5, 7, 11 and 12.

ENCLOSURE 2

Results:

Plant Operations

Unit 2 tripped from full power on November 11 when power was lost to the reactor rod control system due to the sequential loss of both rod drive motor-generator sets. Operators appropriately responded to the trip, and operators' performance during the short shutdown period and subsequent startup was good (paragraphs 3 and 4.8).

An Inspection Follow-up Item was identified concerning a service water pump cavitation issue (paragraph 4.2).

A strength was identified for operator problem identification and plant manipulations in responding to a main feedwater regulating valve equipment failure (paragraph 4.5).

Cold weather protection measures were found to be properly implemented (paragraph 4.6).

Maintenance

A violation was identified for a failure to meet Technical Specifications action statement requirements when a Unit 2 containment air lock was rendered inoperable by an open and uncapped vent valve. The valve was left open and uncapped due to personnel errors during surveillance testing (paragraph 4.7).

Maintenance activities associated with repairs to a failed degraded voltage relay and two rod drive motor-generator sets were found to be proper (paragraphs 5.1 and 5.2).

Engineering

A weakness was identified associated with providing inadequate supporting documentation for Updated Final Safety Analysis Report change requests (paragraph 7).

An Unresolved Item was identified concerning commitments regarding main steam trip valve solenoid valve continuity testing (paragraph 7).

Plant Support

A non-safety related chemistry procedure implementation problem was identified and properly resolved by the licensee (paragraph 8.1).

An annual emergency response exercise was successfully completed by the licensee (paragraph 8.2).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Collins, Director, Emergency Planning
- L. Edmonds, Superintendent, Nuclear Training
- C. Funderburk, Superintendent, Outage and Planning
- *J. Hayes, Superintendent, Operations
- *D. Heacock, Assistant Station Manager, Nuclear Safety and Licensing
- *J. Hegner, Supervisor, Licensing (Corporate)
- *P. Kemp, Supervisor, Licensing
- *W. Matthews, Assistant Station Manager, Operations and Maintenance
- D. Roberts, Supervisor, Station Nuclear Safety
- H. Royal, Director, Nuclear Oversight
- *R. Saunders, Vice President, Nuclear Operations
- D. Schappell, Superintendent, Site Services
- R. Shears, Superintendent, Maintenance
- J. Smith, Superintendent, Station Engineering
- A. Stafford, Superintendent, Radiological Protection
- J. Stall, Station Manager

Other licensee employees contacted included managers, supervisors, operators, engineers, technicians, mechanics, security force members, and office personnel.

NRC Personnel

- *R. McWhorter, Senior Resident Inspector
- *D. Taylor, Resident Inspector

*Attended Exit Interview

Acronyms used throughout this report are listed in the last paragraph.

Effective November 1, the licensee replaced the station Quality Assurance group with a Nuclear Oversight group. Mr. H. Royal, Jr., was named as Director, Nuclear Oversight, at the station.

2. Plant Status

Unit 1 operated the entire inspection period at or near full power.

Unit 2 began the inspection period at full power. On November 11, the unit tripped when power was lost to the reactor rod control system. The reactor was restarted, and the unit returned to commercial service on November 12. The unit returned to full power on November 13 and remained at that power until the inspection period's end.

3. Prompt On-site Response to Events (93702)

On November 11, the licensee notified the inspectors concerning a Unit 2 reactor trip, and the inspectors responded to the site. The inspectors attended the licensee's post-trip review and independently verified that safety system performance was as expected throughout the event. The automatic trip was generated from the RPS when an NI negative rate condition was detected. The trip signal was valid and was caused by all rods dropping into the reactor core due to a loss of electrical power to the rod control system. All safety systems performed as designed.

The rod control system loss of electrical power was caused by a sequential loss of both rod control MG sets. Early on November 11, power from the A rod control MG set was lost when its output breaker opened on directional (reverse) overcurrent. Approximately ten hours later, the electrical output from the B rod control MG set was lost resulting in the loss of all power to the rod control system.

Having reviewed the trip data and operator observations, the inspectors concluded that the licensee's initial response to the equipment failure and the plant trip was appropriate. Operator response to the trip was good, and procedures for responding to the trip were appropriately implemented. Subsequent corrective actions and plant startup are discussed in paragraphs 4.8 and 5.2.

No violations or deviations were identified.

4. Plant Operations (71707)

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness, and adherence to approved procedures. The inspectors attended daily plant status meetings to maintain awareness of overall facility operations and reviewed operator logs to verify operational safety and compliance with TS. Instrumentation and safety system lineups were periodically reviewed from control room indications to assess operability. Frequent plant tours were conducted to observe equipment status and housekeeping. DRs were reviewed to assure that potential safety concerns were properly reported and resolved.

4.1 Routine Operations Inspections

On November 2, the inspectors accompanied the Auxiliary Building AO during routine log taking rounds and equipment checks. The inspectors observed that operator performance during the rounds was proper and that equipment was operating satisfactorily.

On November 5, the inspectors obtained tagging record copies for four safety-related tagouts and verified that tags were properly hung and administrative requirements for tagging control were properly implemented. The inspectors also verified that systems required to be operable were not affected by the components

removed from service. The inspectors walked down tags hung to support maintenance on the SW, casing cooling, gaseous waste, and ventilation systems (tagging records 1-95-SW-0048, 2-95-RS-0020, 1-95-GW-0026, and 1-95-HV-0244). No deficiencies were identified.

4.2 Service Water Pump Noise

On October 27, the inspectors monitored actions to resolve a report of cavitation noise coming from 1-SW-P-1A. The noise was identified by an AO during routine rounds at the SW pump house. The inspectors observed the pump running and noted that the cavitation noise was not obvious. Background noise in the area hindered easy detection. However, the sound could be distinctly heard when in close proximity to the pump shaft seal, and a slight vibration could be felt at the pump base.

To determine the noise's cause and verify pump operability, the licensee initiated an investigation, and the inspectors observed various investigation stages. The SW traveling screens were rotated to identify possible clogging, and pump vibration data was taken and reviewed. Technicians identified an elevated vibration at a frequency between 600 and 700 Hz at the pump stuffing box. This vibration data point indicated the potential presence of cavitation.

The inspectors then observed operators performing 1-PT-75.2A, Service Water Pump (1-SW-P-1A) Quarterly Test, revision 25. The test demonstrated pump operability by performing a one-point check of flow and discharge pressure with the pump operating at a nominal flow rate of approximately 11,500 gpm. Pump vibrations were also recorded. The inspectors verified that all data met test acceptance criteria and was consistent with past test data. Following further reviews by the licensee and replacement of an air relief valve associated with the pump, the PT was again performed. All data continued to meet acceptance criteria, but the cavitation noise remained. Based on a test data review and past performance, the licensee concluded that the pump was operable but continued to investigate the problem.

Previous to this problem's development, the licensee was procuring an exact replacement SW pump to support planned change out and refurbishments for all four SW pumps in early 1996. On November 15, 1995, during vendor replacement pump NPSH testing, similar cavitation indications were observed. In response to this finding, the licensee originated DR 95-1829 which documented the problems experienced with cavitation and possible pump NPSH concerns. A preliminary engineering analysis was performed to analyze SW pump operability. This analysis demonstrated that based on the information available, all SW pumps would continue to be able to perform their design basis functions provided operator actions are taken to isolate two RSHxs one hour after a design-basis accident. The licensee issued a standing order to

operators on November 16 to inform them concerning this action. The inspectors reviewed the licensee's preliminary engineering analysis and the standing order and concluded that they justified continued facility operation. However, at the inspection period's end, more detailed analyses for SW pump performance was ongoing. This issue is identified as Inspection Follow-up Item 50-338/95-20-01: Service Water Pump Cavitation Issue.

4.3 Operator Requalification Training

On November 1, the inspectors observed two operating crews during a simulator training session. The training session consisted of scenarios in which operators responded to abnormal and emergency situations. The inspectors observed that operator communications and emergency procedure usage were good. Additionally, the inspectors noted that senior Operations Department supervisors were present during the training and worked closely with training personnel to ensure high training standards were set for operator performance.

4.4 Notices to Workers Postings

On November 2, the inspectors reviewed the licensee's compliance with 10 CFR 19.11 concerning notices to workers postings. The inspectors reviewed VPAP-2802, Notifications and Reports, revision 5, which specified how the requirements were to be implemented at the facility. The inspectors found that VPAP-2802 appropriately listed the various documents which were required to be posted by 10 CFR 19.11 and stated that the documents would be posted at five active locations at the site. The inspectors visited all five of the locations and verified that the required documents were properly posted. The inspectors concluded that the licensee was complying with the 10 CFR 19.11 requirements.

4.5 Feedwater Regulating Valve Problem

At approximately 5:00 a.m. on November 3, Unit 1 operators observed a very slight downward perturbation in A SG feedwater flow. Operators were dispatched to check the A MFRV, but no problems were found. At approximately 6:00 a.m., operators observed a very slight upward perturbation in A SG feedwater flow. Operators were again dispatched and a small air leak was identified on the A MFRV instrument air supply AOV. The AOV served to isolate all control air from the A MFRV control circuit upon a loss of instrument air. Recognizing the potential impact on the plant if the AOV failed, operators took local operation of the A MFRV while awaiting maintenance. At 7:30 a.m., the inspectors reviewed the licensee's initial response to the problem. The inspectors found that the original feedwater flow perturbation was small and could have easily gone unnoticed by operators had they not been alert. The inspectors also found that during local MFRV operation, operators were in positive control of

the situation and were appropriately using plant procedures during the abnormal situation.

After obtaining a new AOV, I&C technicians completed AOV replacement later on the same day. The licensee took the initiative to conduct a training session for operators involved in returning the A MFRV to automatic control. The inspectors then observed the shift back to automatic control and noted good communications between control room and local operators, as well as, between local operators and I&C technicians. Valve manipulations were performed carefully and methodically, and the MFRV was returned to automatic operation without problems. The inspectors concluded that the licensee's response to the MFRV problem was a strength, in that, the initial problem identification and the MFRV manipulations both demonstrated excellent operator performance.

Later the same date, the licensee examined the failed AOV and determined that a hardened O-ring had caused the air leak. Additionally, the licensee identified that internal to the valve, another O-ring was found to be hardened and interfering with valve stem movement (DR 95-1738). This problem would have prevented the valve from performing its function to isolate air from the MFRV control circuit on a loss of instrument air. The inspectors reviewed the control system's operation and verified that the MFRVs' safety-related function (closing during a feedwater isolation signal) would not be affected by such a failure. On November 12, while Unit 2 was shutdown following a reactor trip, the licensee stroked all three Unit 2 AOVs to verify proper operation. At the inspection period's end, the licensee was still evaluating the failure for its potential applicability to the other MFRVs and possible additional corrective actions.

4.6 Cold Weather Protection

On November 5, the inspectors reviewed the licensee's procedures for cold weather protection and their implementation. Procedure C-GOP-4, Cold Weather Operations, revision 8-P1, was performed monthly during cold weather or as directed by shift supervision. The inspectors reviewed the procedure completed on November 4 and found that operators had documented completing the actions necessary to protect safety-related systems from freezing. Additionally, the inspectors performed walkdowns to verify cold weather protection implementation in the AFW buildings, the casing cooling water pump houses, EDG rooms, the SBO DG building, and around the RWSTs. The inspectors also verified that the breakers supplying power to all safety-related RWST heat trace circuits were properly aligned. The inspectors concluded that all safety-related cold weather protection was properly implemented.

4.7 Containment Air Lock Valve Alignment Problem

On November 6, operations support personnel performing a procedure walkdown identified an incorrectly positioned valve on the Unit 2 personnel air lock. The valve, 2-CE-4, served as a test connection for pressurizing the personnel air lock and was found opened and uncapped when it should have been closed and capped. The as-found configuration opened a pathway for air to bypass the air lock outer door. After identification, the valve was promptly shut and capped.

Initial licensee investigations focused on the fact that the valve and cap were probably operated and left incorrectly aligned on November 1 when operators were performing semi-annual surveillance test 2-PT-62.1, Containment Air Locks - Leakage Rate, revision 14. Licensee personnel reviewed security records for entry into the area and found that no other evolutions which would have repositioned the valve had occurred since that date. Additionally, it was found that containment integrity was preserved by at least one boundary during the time the valve was open, because there were no air lock inner door openings.

The licensee continued to investigate and concluded that the valve was mispositioned on November 1 due to personnel error during 2-PT-62.1. The licensee interviewed the operators that performed the PT and found that they did not specifically recall returning the valve to its required position. Additionally, the licensee identified that the IV step for disconnecting the test apparatus was performed by one of the operators directly involved with the procedure, rather than by an operator not involved in the evolution as required by station administrative procedures. Finally, the licensee identified that supervisors for the operators performing the PT did not provide the operators with a pre-evolution briefing as required by station administrative procedures. The inspectors reviewed the licensee's findings and concluded that the findings concerning personnel errors were appropriate.

The inspectors reviewed the test performed on November 1 and observed the valve's configuration in the plant. The inspectors found that the procedure was not specific in describing operations involving 2-CE-4 or its cap. The procedure had a step with a sign off and IV stating, "Disconnect the test apparatus in accordance with instructions on Attachment 6.1 and replace the plug." Operation of 2-CE-4 was not specifically mentioned in the procedure. The inspectors concluded that the operators' mistake was attributable, in part, to an inadequate procedure. The licensee's review concluded similarly. The licensee informed the inspectors that such weaknesses in the PT had been identified by QA observers during its last performance several months earlier, and a procedure revision was being processed. The correctly

positioned valve was identified during the field walk-down for this proposed procedure revision.

The inspectors reviewed the regulatory requirements for containment integrity. TS LCO 3.6.1.3.a required that each containment air lock be operable with both doors closed except when used for transit. The open and uncapped valve condition was equivalent in function to rendering the air lock outer door inoperable. With one air lock door inoperable, TS LCO 3.6.1.3, action "a" required that the operable door be locked within 24 hours or that the plant be placed in hot standby within the next six hours and placed in cold shutdown within the following 30 hours. Contrary to this requirement, during the period from approximately 4:00 p.m. on November 1, until approximately 4:30 p.m. on November 6, the Unit 2 containment air lock outer door was inoperable due to valve 2-CE-4 being left opened and uncapped, and the licensee did not comply with the requirements of the applicable action statement. This is identified as Violation 50-339/95-20-02: Failure to Comply with TS 3.6.1.3 for Air Lock Outer Door Rendered Inoperable by Open Test Connection. This licensee-identified violation is being cited because of similar recent human performance problems. This violation is considered to have occurred in the Maintenance area.

4.8 Restart Following Reactor Trip

On November 11, Unit 2 tripped from full power (paragraph 3). On November 12, the inspectors observed Unit 2 restart activities and monitored the licensee's repair efforts. The licensee's review found that loose fuse assemblies in both the A and B rod drive MG set voltage regulator cabinets had apparently caused the rod drive MG sets to be sequentially lost. The licensee tightened all fuse assemblies and proper rod drive MG set operation was restored (paragraph 5.2.).

The inspectors reviewed the licensee's corrective actions prior to unit restart. On November 12, the inspectors attended the SNSOC meeting which reviewed the post-trip review and corrective action status. The SNSOC reviewed equipment problems and resolutions prior to reactor restart. The inspectors verified that minor equipment problems with NIs, MFRVs, and miscellaneous secondary equipment were corrected. The inspectors concluded that the licensee properly reviewed equipment status and resolved problems prior to unit restart.

The inspectors observed operators performing reactor startup and power ascension to place the main generator on line. Control room operators properly used appropriate procedures and were cautious and methodical during startup operations. No significant problems were encountered during the startup. The inspectors noted that operator performance was good during shutdown and restart activities.

4.9 NRC Notifications

The inspectors reviewed the following licensee notifications to the NRC to ascertain if the required reports were adequate, timely and proper for the events.

On November 7, the licensee notified the NRC as required by 10 CFR 50.72 concerning the notification of off-site authorities. Specifically, the licensee notified the Federal Energy Regulatory Commission of a Lake Anna Dam backup diesel generator failure. The inspectors monitored the licensee's actions and found them to be appropriate for the situation.

On November 11, the licensee notified the NRC as required by 10 CFR 50.72 concerning an RPS and ESF actuation generated when Unit 2 tripped from full power. The inspectors responded to the site and evaluated the event's significance (paragraphs 3, 4.8, and 5.2).

One violation and one inspection follow-up item were identified.

5. Maintenance Observations (62703)

Maintenance activities were observed and reviewed to verify that activities were conducted in accordance with TS and procedures, and licensee commitments to regulatory guides and industry codes or standards.

5.1 Degraded Voltage Relay Failure

On November 2, technicians performing 2-PT-36.9.1.J, Degraded Voltage/Loss of Voltage Functional Test: 2J Bus, revision 23, found that while testing the 90 percent degraded voltage A and B phase relays, expected annunciators were not received when the test push button was depressed. At the time, it could not be determined if one of the relays (A or B phase) had failed, or if the problem was associated with the test circuit. The inspectors observed a test repeat which was performed after briefing and stationing personnel to observe the A and B phase relays. During the retest, the relays and annunciators functioned as expected. The test was continued, and the B and C phases were then tested. When the test push button was pushed, the expected annunciators were once again not received. At this point, the licensee declared the B phase relay inoperable and proceeded to comply with TS action statement 3.3.2.1.a.19, which required placing the channel in the tripped condition within one hour.

In order to meet the one hour TS requirement, the licensee performed procedure 2-EM-280-02, 2J Emergency Bus Phase A, B, and C Degraded Voltage and Undervoltage, revision 0, for the B phase degraded voltage relay. The procedure installed four jumpers in cabinet 2-EP-CB-28J, Service Water Logic Panel B. The inspectors

verified by using elementary diagrams that the jumpers would effectively place the B phase undervoltage relay in trip. No problems were encountered during the jumpers' placement.

On November 3, the inspectors observed the B phase relay replacement. The work was performed under WO 329415 using supplemental work instructions. The inspectors reviewed the work instructions and found that they were sufficiently detailed. The inspectors observed the pre-job brief, installation of jumpers used to maintain circuit continuity, lead lifting and old relay removal, and new relay installation. The inspectors also verified that the post maintenance testing adequately tested the relay before returning the relay to an operable status. The inspectors concluded that the relay replacement was well planned and performed.

5.2 Rod Drive MG Set Repairs

On November 13, the inspectors met with maintenance supervisors to review the troubleshooting and corrective maintenance performed on the rod drive MG sets following the Unit 2 reactor trip on November 11. The supervisors described the sequence of events leading to the discovery that fuse assemblies were loose in both rod drive MG set voltage regulators.

After the B rod drive MG set failed causing the reactor trip, the licensee attempted to restart the set. During the restart, the output voltage would come up during field flashing, but quickly decayed off after field flashing was stopped. Voltages were measured at several points in the circuit, and it was found that no power was present to the voltage regulator. When a voltage probe was placed on the circuit power supply fuse assembly, a fuse was found to rotate freely. After repositioning the fuse, voltage correctly remained after field flashing. The licensee concluded that the loose fuse connection caused the B rod drive MG set failure. The inspectors verified, using regulator wiring diagrams, that the licensee's findings were reasonable in explaining the B rod drive MG set failure. The inspectors also reviewed the equipment status and indications during and after the reactor trip and found that the postulated failure mechanism was consistent with the indications.

Concerning the A rod drive MG set which failed several hours before the B rod drive MG set, technicians disassembled the generator exciter and were unable to identify any problems. After discovering the loose fuse assemblies on the B rod drive MG set, the A rod drive MG set voltage regulator cabinet was checked, and loose fuse assemblies were also identified. The licensee reviewed the equipment status and indications following the A rod drive MG set failure and found that the loose fuse assemblies were consistent with the indications. The licensee concluded that loose fuses had also caused the A rod drive MG set failure. After

reviewing the drawings and equipment indications present after the failure, the inspectors found that the licensee's hypothesis was sound. The licensee completed maintenance to tighten all fuse assemblies in both rod drive MG set voltage regulator cabinets prior to unit restart. The inspectors observed startup of both rod drive MG sets with no problems noted.

The inspectors reviewed the work history for the voltage regulators and fuse assemblies. The rod drive MG sets and associated circuits were overhauled every refueling outage (18 months). For the Unit 2 rod drive MG sets, this maintenance was last performed in May 1995, as documented by work order records. During that overhaul, all fuses were replaced in the voltage regulator cabinet as required by work instructions, and no problems with loose assemblies were recorded on the work records. Additionally, it was found that in August 1995, a problem with the indicating light for the A rod drive MG set output breaker had been traced to a loose fuse connection and repaired (DR 95-1285 and WO 00322904). At that time, the loose connection was considered an isolated problem and no further investigations were performed. The inspectors concluded that the licensee actions for previously identified loose fuse holders were appropriate.

On November 17, the licensee informed the inspectors that the need to inspect fuse holders for tightness throughout the plant had been previously identified. A change to add such instructions to all procedures used by technicians who perform such inspections had been initiated on August 2, 1995, and was planned for completion by December 31, 1996, with other procedural improvements. In the interim, technicians had been provided with generic activity checklists which required that fuse holder inspections and other generic work improvement items be performed and documented with each maintenance procedure use. The inspectors noted that for future preventive maintenance activities (such as Unit 1 rod drive MG set checks during the next outage), this would ensure that fuse holders were appropriately checked for tightness.

No violations or deviations were identified.

6. Surveillance Observations (61726)

Surveillance testing activities were observed and reviewed to verify that testing was performed in accordance with procedures, test instrumentation was calibrated, LCOs were met, and any deficiencies identified were properly reviewed and resolved.

Turbine-driven Auxiliary Feedwater Pump Testing

On November 6, the inspectors observed operators performing 1-PT-213.31, Valve Inservice Inspection (MS Supply Check Valves to 1-FW-P-2), revision 2, and 1-PT-71.1Q, 1-FW-P-2 Turbine-driven Auxiliary Feedwater

Pump and Valve Test, revision 15. The tests were required by TS 4.7.1.2.b.1 and TS 4.0.5 to demonstrate the pump's ability to develop adequate discharge pressure and flow and to demonstrate the operability for various valves in the pump's steam and water flow paths.

The inspectors reviewed the procedures and observed their use by operators in the plant. The inspectors found that the procedures were written with good detail in describing operator actions and expected system responses. Additionally, the inspectors noted that operator performance was excellent as demonstrated by good procedure adherence, good communications practices while in adverse environments, and the use of proper data collection techniques. The inspectors also independently collected and reviewed test data to verify that acceptance criteria for pump and valve performance were met. No discrepancies were noted, and the inspectors observed that the pump speed control governor performed well during pump starts and system manipulations. The inspectors concluded that the tests had been performed well by operators and that system performance had been adequately demonstrated.

No violations or deviations were identified.

7. On-site Engineering (37551)

On-site engineering activities were reviewed to determine their effectiveness in preventing, identifying and resolving safety issues, events and problems.

Fuel Pool Cooling Design Review

The inspectors reviewed the spent fuel pool cooling system design to verify its adequacy. The inspectors found that the spent fuel pool cooling system was designed to remove the residual heat produced by one-third of an irradiated core 150 hours after shut down while maintaining temperature at or below 140°F with two coolers and one pump in operation. The system was also designed to remove the decay heat from a full core while maintaining temperature below 170°F with two coolers and one pump in operation.

The UFSAR was reviewed to verify that its system description was consistent with current operating practices. Section 9.1.3.1, Design Basis, described the system's cooling capability and section 9.1.3.3, Design Evaluation, described the one-third core off-load case and the full core off-load case. The inspectors noted that the description for the one-third and full core off-load cases had been changed and reviewed the associated UFSAR change package. The changes involved removing the terms "normal" for the one-third core off-load case, and "abnormal" for the full core off-load case. The change was made because the licensee had been conducting full core off-loads as the normal refueling method. After reviewing the system design, the inspectors did not have a safety concern with the spent fuel pool cooling system's ability to perform its design function for the full core off-load case. Specifically, the system's operation for the full core off-load case was the same as the

one-third core off-load case. For the full core off-load case with only one of the two installed pumps operating, fuel pool temperature would be maintained below 170°F. In addition, the system was designed to meet seismic category one requirements, and the cooling pumps were powered by separate emergency electrical buses. The inspectors noted that the licensee considered the changes to be administrative in nature and as such, no safety evaluation was performed. The inspectors questioned classifying this change as administrative noting that station administrative procedures required a safety evaluation for deviations that identify discrepancies in the UFSAR.

Further reviews identified that the change was made during a UFSAR operational review performed in 1992 and 1993. The review was conducted to verify that plant operation was in accordance with the UFSAR. The review resulted in 163 UFSAR change requests. The inspectors selected 26 additional UFSAR change request packages and reviewed them to see if similar changes had been performed without activity screenings or safety evaluations. The inspectors identified the following additional discrepancies:

- UFSAR change request FN 92-130, implemented on March 15, 1993, deleted requirements for performing MSTV solenoid valve coil continuity testing on a monthly basis. Prior to the change, UFSAR section 6.2.4.3 described steps taken to minimize the potential for a common mode failure of the MSTVs and read, "additional assurance of solenoid valve coil integrity is provided by a coil continuity test performed once a month." The "once a month" requirement was changed to read "in accordance with technical specifications," and referred to TS table 4.3-2, item 4, steam line isolation, and associated note 2. Note 2 stated that each train or logic channel shall be functionally tested at least every other 31 days up to and including input coil continuity testing to the ESF slave relays. The inspectors concluded that the referenced TS did not require solenoid valve continuity testing as assumed by the UFSAR change, and after further review, the licensee agreed with the inspectors' conclusion. Additionally, it could not immediately be determined if any such monthly testing had ever been performed.

To address this issue, on November 14, the licensee initiated DR 95-1820. At the inspection period's end, the licensee was researching the original UFSAR commitments to the NRC for clarification along with any past actions taken to test the MSTV solenoids. Until additional information will be supplied by the licensee regarding this issue, this issue is identified as Unresolved Item 50-338, 339/95-20-03: Review MSTV Solenoid Continuity Testing.

- UFSAR change request FN 92-152, revised the discussion regarding the containment instrument air supply. The change removed reference to the instrument air system as being a backup system to the containment instrument air sub-system. The containment

instrument air sub-system was no longer considered by the licensee to be sufficient to maintain containment instrument air demands under all conditions. The change was made as an "editorial change" without reference to a supporting safety evaluation. After further review, the inspectors identified that DCP 89-04-03, Service and Instrument Air Upgrade, and its associated safety evaluation, would support the UFSAR changes that were made.

The inspectors reviewed the problem with the licensee and determined that other such "editorial changes", which did not provide sufficient documentation to support the change classification as editorial, similarly existed. Specifically, changes which could be considered differences to the way in which the facility was operated, were classified as editorial (e.g., FN 92-152, above). Past DCs and/or SEs may have supported the changes; however, documentation referencing these DCs and/or SEs were not included with the UFSAR change request packages. The inspectors concluded that the lack of documentation supporting "editorial changes" during the 1992 and 1993 UFSAR updates was a weakness. The inspectors were informed that the UFSAR changes that were made during that update process would be reviewed to ensure that no safety issues existed.

One unresolved item was identified.

8. Plant Support Activities (71750)

Plant support activities were observed and reviewed to ensure that programs were implemented in conformance with facility policies and procedures and in compliance with regulatory requirements. Activities reviewed included radiological controls, physical security, emergency preparedness, and fire protection.

8.1 Service Water and Bearing Cooling Water Chemical Additions

The inspectors performed several chemistry observations during this and the previous inspection period. Discussions were held with chemistry department personnel regarding chemical addition procedures, and walk-downs were performed in areas where biocide chemicals were added to the SW and BC systems. The inspectors found that material conditions in these areas were good. On October 22 and 23, while discussing those inspections and chemical addition practices during chemistry shift turnover observations, the inspectors were made aware of a potential failure to comply with station administrative requirements regarding procedure adherence. Specifically, the inspectors learned that on September 13, 1995, the procedure for adding a biocide chemical (H-900) to the BC system was not on-hand during chemical additions. Additionally, during performance, IVs for valve status were not performed in accordance with station administrative procedures.

The inspectors obtained and reviewed the copy of CH-32.920, Bearing Cooling Water Brominator: Chemical Additions, revision 4, performed on September 13, 1995. No discrepancies were identified with the procedural records. However, discussions with personnel involved confirmed that the procedure was not on-hand during performance. Contrary to licensee policies, the procedure was completed after personnel returned to the office following the evolution. Additionally, the IV steps were performed by an individual directly involved with the procedure, rather than by an individual not involved in the evolution as required by station administrative procedures. The inspectors did not find any evidence of other similar past problems in the chemistry area. As a result of the inspectors' inquiries, licensee personnel informed station management about the procedure performance issues, and management directed that a station DR be initiated (DR 95-1673).

On October 31, the inspectors discussed corrective actions for the event with station management. The inspectors found that corrective actions were being implemented in accordance with the licensee's administrative guidelines for dealing with personnel performance issues. Additionally, the event and its associated personnel performance issues were being discussed with each chemistry shift by the responsible superintendent. The inspectors reviewed with supervisors the basis for the personnel actions taken and concluded that the problem was being appropriately addressed by the licensee. Because of the non-safety related nature of the event and its low safety significance, no enforcement action was warranted.

8.2 Annual Emergency Response Exercise

On November 8, the inspectors observed the licensee's annual emergency response exercise. This exercise was an "off year" exercise where a full NRC team inspection was not performed. The inspectors obtained a copy of the planned exercise scenario in advance and reviewed the planned scope and objectives. Objectives were selected by the inspectors to be independently observed and assessed during the exercise. These included: 1) emergency classification, 2) emergency response facility mobilization and command and control, 3) governmental initial notifications, 4) on-site emergency team control, and 5) licensee self-critique.

During the exercise, the inspectors observed player and controller performance in the CR simulator, the TSC, the OSC, and in the plant. The inspectors found overall that the licensee met the objectives reviewed. Emergency classifications and governmental initial notifications were correct, and emergency response facility mobilization was completed within required time limits.

Response facility command and control were good, and the licensee demonstrated the ability to self-critique by identifying problems both immediately after the exercise and during formal critique activities on November 9.

The inspectors noted the following:

- Controller to player interaction was poor during a mini-scenario at the 1J emergency bus.
- Players frequently approached the exercise as a single unit event. The actual scenario, a major earthquake, would likely have involved both units.
- Controller discussions and their use of installed communications equipment at the OSC frequently distracted OSC players.
- The licensee's automatic paging system was improperly initiated for the exercise when an actual emergency response code was entered.
- Controllers were not prepared to deal with the early staging of plant emergency teams at the HP office.

On November 13, the inspectors met with emergency planning personnel to discuss these observations. Most of the inspectors' observations had already been identified by the licensee. The remainder were included with other exercise comments for review and disposition.

No violations or deviations were identified.

9. Evaluation of Licensee Self-Assessment Activities (40500)

Self-assessment programs were reviewed to determine if programs contributed to the prevention of plant problems by monitoring and evaluating plant performance, providing assessments and findings, and communicating and following up on corrective action recommendations.

9.1 Management Review Board Meeting

On October 31, the inspectors attended a Management Review Board meeting. These weekly meetings provided station senior managers with opportunities to review the status of selected station issues. The inspectors noted that the board reviewed the status of third quarter station self-assessment annunciators. The inspectors found that the licensee's meetings continued to be a positive initiative.

9.2 Human Performance Improvement Stand Down

On November 15, the licensee conducted a four-hour human performance improvement stand down. This activity was a planned follow-up to a full stand down day held on August 9 (NRC Inspection Report Nos. 50-338, 339/95-15). All non-essential work activities at the facility were suspended and numerous supervisory/employee discussion sessions were held. The sessions focused on recent human performance problems and station policies and practices to reduce human performance. The inspectors attended two sessions between senior station managers and employee groups and concluded that the practice was a positive initiative to improve performance.

No violations or deviations were identified.

10. Previous Inspection Item Follow Up (92903)

The following previous inspection item was reviewed and closed.

(Closed) IFI 50-338, 339/94-21-01: Fuel Building Ventilation Power Supply Not Safety-Related

This IFI was opened to follow the licensee's submittal to the NRC to clarify fuel building ventilation system power supply configuration. During original design submittals, the licensee indicated through the UFSAR that the facility met NRC Regulatory Guide 1.52, Design, Testing, and Maintenance Criteria for Post Accident ESF Atmosphere Cleanup System Air Filtration and Absorption Units of Light-Water-Cooled Nuclear Power Plants, June 1973, requirements. Subsequent reviews identified that the Fuel Building ventilation fans were non-safety related and were powered from a non-safety related power supply. In addition, portions of the system did not meet seismic category one requirements. This item was not considered a significant safety issue because evaluations demonstrated that even without filtration, a fuel handling accident in the fuel building would not result in doses exceeding 10 CFR 100 limits.

On October 17, 1995, the licensee submitted amendment requests to the NRC to allow the containment personnel air lock doors to remain open during refueling operations. The amendment request also clarified the facility fuel building ventilation configuration. The inspectors reviewed the amendment submitted to the NRC and attended the MSRC meeting which reviewed the amendment request. The request reconciled the inconsistencies that were found between the as-built plant configuration and the UFSAR. The inspectors concluded that the amendment request resolved the discrepancy and formally documented to the NRC the as-built fuel building ventilation system configuration.

No violations or deviations were identified.

11. Exit Interview

The results were summarized on November 20, 1995, with those persons identified in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results addressed in the Summary section and those listed below.

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description</u>
IFI	50-338/95-20-01	Open	Service Water Pump Cavitation Issue (paragraph 4.2)
VIO	50-339/95-20-02	Open	Failure to Comply with TS 3.6.1.3 for Air Lock Outer Door Rendered Inoperable by Open Test Connection (paragraph 4.7)
URI	50-338, 339/95-20-03	Open	Review MSTV Solenoid Continuity Testing (paragraph 7)
IFI	50-338, 339/94-21-01	Closed	Fuel Building Ventilation Power Supply Not Safety-Related (paragraph 10)

Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

12. Index of Acronyms

AFW	AUXILIARY FEEDWATER
AO	AUXILIARY OPERATOR
AOV	AIR-OPERATED VALVE
BC	BEARING COOLING
CFR	CODE OF FEDERAL REGULATIONS
CR	CONTROL ROOM
DC	DESIGN CHANGE
DCP	DESIGN CHANGE PACKAGE
DG	DIESEL GENERATOR
DR	DEVIATION REPORT
EDG	EMERGENCY DIESEL GENERATOR
ESF	ENGINEERED SAFETY FEATURE
F	FAHRENHEIT
FR	FEDERAL REGISTER
GPM	GALLONS PER MINUTE
HP	HEALTH PHYSICS
HZ	HERTZ
I&C	INSTRUMENTATION AND CONTROLS
IFI	INSPECTION FOLLOW-UP ITEM
IV	INDEPENDENT VERIFICATION
LCO	LIMITING CONDITION FOR OPERATION

LCO	LIMITING CONDITION FOR OPERATION
MFRV	MAIN FEEDWATER REGULATING VALVE
MG	MOTOR-GENERATOR
MSRC	MANAGEMENT SAFETY REVIEW COMMITTEE
MSTV	MAIN STEAM TRIP VALVE
NI	NUCLEAR INSTRUMENT
NO.	NUMBER
NPSH	NET POSITIVE SUCTION HEAD
NRC	NUCLEAR REGULATORY COMMISSION
OSC	OPERATIONS SUPPORT CENTER
PDR	PUBLIC DOCUMENT ROOM
PT	PERIODIC TEST
QA	QUALITY ASSURANCE
RPS	REACTOR PROTECTION SYSTEM
RSHX	RECIRCULATION SPRAY HEAT EXCHANGER
RWST	REFUELING WATER STORAGE TANK
SBO	STATION BLACKOUT
SE	SAFETY EVALUATION
SG	STEAM GENERATOR
SNSOC	STATION NUCLEAR SAFETY AND OPERATING COMMITTEE
SW	SERVICE WATER
TS	TECHNICAL SPECIFICATION
TSC	TECHNICAL SUPPORT CENTER
UFSAR	UPDATED FINAL SAFETY ANALYSIS REPORT
URI	UNRESOLVED ITEM
VIO	VIOLATION
WO	WORK ORDER