UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-280/89-20 and 50-281/89-20

Licensee: Virginia Electric and Power Company
Glen Allen, VA 23060

Docket Nos.: 50-280 and 50-281 License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: June 4 - July 1, 1989.

Inspectors: FOR 7/21/89
W. E. Holland, Senior Resident Inspector Date Signed

FOR 7/21/89
J. W. York, Resident Inspector Date Signed

FOR 7/21/89
L. E. Nicholson, Resident Inspector Date Signed

Accompanying Inspector: C. Paulk

Approved by: 7/21/89
P. E. Fredrickson, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted on site in the areas of plant operations, plant maintenance, plant surveillance, licensee event report review, and followup on inspector identified items.

Certain tours were conducted on backshifts or weekends. Backshift or weekend tours were conducted on June 4, 5, 10, 11, 13, 17, 18, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, and July 1.

Results:

During this inspection period, one violation and two inspector followup items were identified. The violation (paragraph 6.a) was identified for failure to provide an adequate procedure to establish initial plant conditions for testing. The violation meets NRC Enforcement Policy for not issuing a Notice of Violation and is not cited. In addition, an IFI was identified (paragraph 5.c) for followup on MCR envelope pressurization improvements. Finally, an IFI was identified (paragraph 5.d) for followup on licensee evaluation of maintenance activities associated with the repair of 1-SI-P-1A.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*W. Benthall, Supervisor, Licensing
R. Bilyeu, Licensing Engineer
R. Blount, Superintendent of Technical Services
*D. Christian, Assistant Station Manager
D. Erickson, Superintendent of Health Physics
*E. Grecheck, Assistant Station Manager
*M. Kansler, Station Manager
J. McCarthy, Superintendent of Operations
G. Miller, Licensing Coordinator, Surry
*J. Ogren, Superintendent of Maintenance
*T. Sowers, Superintendent of Engineering
A. Price, Site Quality Assurance Manager

Other licensee employees contacted included control room operators, shift technical advisors, shift supervisors and other plant personnel.

*Attended exit interview.

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

On June 7, 1989, the NRC Region II Director, Division of Reactor Projects, L. Reyes visited the residents at the Surry Power Station. During the visit, Mr. Reyes conferred with the residents, was given a plant tour, and met with station management.

2. Plant Status

Unit 1 began the reporting period in cold shutdown. Maintenance and testing activities were completed and the unit commenced heatup above 200F on June 30, 1989. At the end of the inspection period, the unit was in intermediate shutdown with a slow heatup in progress.

Unit 2 began the reporting period in cold shutdown. The unit remained in cold shutdown for the duration of the inspection period while substantial operational reviews and maintenance activities were being conducted.

3. Operational Safety Verification (71707)

a. Daily Inspections

The inspectors conducted daily inspections in the following areas: control room staffing, access, and operator behavior; operator adherence to approved procedures, TS, and limiting conditions for

operations; examination of panels containing instrumentation and other reactor protection system elements to determine that required channels are operable; and review of control room operator logs, operating orders, plant deviation reports, tagout logs, jumper logs, and tags on components to verify compliance with approved procedures.

The inspectors specifically focused on Unit 1 restart activities during the latter part of the inspection period. Twenty-four hour monitoring coverage of the Unit 1 restart activities by the resident staff commenced on June 24, 1989.

b. Weekly Inspections

The inspectors conducted weekly inspections in the following areas: verification of operability of selected ESF systems by valve alignment, breaker positions, condition of equipment or components, and operability of instrumentation and support items essential to system actuation or performance. Plant tours were conducted which included observation of general plant/equipment conditions, fire protection and preventative measures, control of activities in progress, radiation protection controls, physical security controls, plant housekeeping conditions/cleanliness, and missile hazards. The inspectors routinely monitored the temperature of the AFW pump discharge piping to ensure steam binding is prevented.

The inspectors devoted a considerable amount of time to plant tours during this inspection period. These tours included several extensive walkdowns with licensee management of the Unit 1 containment as well as various remote locations throughout the plant. The overall condition of Unit 1 has improved. Housekeeping inside the containment was observed to be much improved over previous startups. The number of work request tags hanging on plant equipment appeared to be minimal. The inspectors verified that temporary staging and services had been removed. No outstanding discrepancies were identified as a result of these walkdowns.

c. Biweekly Inspections

The inspectors conducted biweekly inspections in the following areas: verification review and walkdown of safety-related tagouts in effect; review of sampling program (e.g., primary and secondary coolant samples, boric acid tank samples, plant liquid and gaseous samples); observation of control room shift turnover; review of implementation of the plant problem identification system; verification of selected portions of containment isolation lineups; and verification that notices to workers are posted as required by 10 CFR 19.

d. Areas Inspected

Inspections included areas in the Unit 1 and 2 cable vaults, vital battery rooms, steam safeguards areas, emergency switchgear rooms, diesel generator rooms, control room, auxiliary building, Unit 1 and 2 containments, cable penetration areas, independent spent fuel storage facility, low level intake structure, and the safeguards valve pit and pump pit areas. Reactor coolant system leak rates were reviewed to ensure that detected or suspected leakage from the system was recorded, investigated, and evaluated; and that appropriate actions were taken, if required. The inspectors routinely independently calculated RCS leak rates using the NRC Independent Measurements Leak Rate Program (RCSLK9). On a regular basis, RWPs were reviewed and specific work activities were monitored to assure that they were being conducted per the RWPs. Selected radiation protection instruments were periodically checked, and equipment operability and calibration frequency were verified.

e. Physical Security Program Inspections

In the course of monthly activities, the inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital areas access controls; searching of personnel, packages and vehicles; badge issuance and retrieval; escorting of visitors; and patrols and compensatory posts.

During annual rebadging of one of the resident inspectors, it was noted that the licensee's security staff has implemented a special briefing of all persons who are badged for unescorted access to the station. This briefing addressed all required duties and responsibilities associated with being granted unescorted access. The inspector believes that this new briefing concept is a positive training attribute with regards to implementation of personnel awareness of security requirements at the station.

f. Licensee 10 CFR 50.72 Reports

(1) On June 5, 1989, the licensee made a report in accordance with 10 CFR 50.72 regarding an inadvertent ESF actuation of feedwater system components on Unit 1. The unit was in cold shutdown at the time of the actuation. The ESF actuation occurred during preparation for CLS/Logic testing of the Unit 1 "B" train ESF components. The actuation was a result of removal of a SG level dummy signal on one channel of one of the SGs. Another channel was already in trip due to actual SG level being below the low-low level setpoint. This condition made up the 2 out of 3 matrix that would normally result in auto start of AFW pumps,

opening of AFW supply valves, and isolation of SG blowdown. All components which were operable for the test performed as designed. The licensee stopped testing preparation and critiqued the event. This issue is addressed in more detail in paragraph 6.

(2) On June 15, 1989, the licensee made a report in accordance with 10 CFR 50.72 regarding an inadvertent ESF actuation of portions of the auxiliary building ventilation system. The actuation occurred as a result of returning to service 1-VS-F-58A (Auxiliary Building CAT I Filtration Fan). The starting of the fan resulted in a reduced IA pressure to the ESF components resulting in ESF actuation. The reduced IA pressure was attributed to the installation of special test equipment. No ESF signal was present when the actuations occurred.

(3) On June 22, 1989, the licensee made a report in accordance with 10 CFR 50.72 regarding an inadvertent ESF actuation of portions of the ventilation system dampers. The actuation occurred as a result of electrical arcing that was generated while inserting a fuse into a vital bus circuit. The circuit tripped and the resulting loss of power on that circuit caused the dampers to realign to their ESF position. The licensee is continuing to troubleshoot the cause of the arcing and circuit trip. No ESF signal was present when the actuation occurred.

g. Restart Readiness Assessment Review - Unit 1

During this inspection period, the inspectors monitored the licensee's management review of all functional areas associated with the return to operation of Unit 1. These functional areas included operations, maintenance, surveillance, engineering, radiological controls, safety assessment, and quality verification. The management team involved in these reviews included the Station Manager, the two Assistant Station Managers, the Quality Assurance Manager, and the Assistant Vice President, Nuclear Operations. The initial reviews of each functional area were held on June 12 and 13, 1989. Each review consisted of the superintendent of each functional area discussing why their area of responsibility was ready for restart. The discussions focused on items that had not been completed at that time and which were required for unit restart. The following items were reviewed in each functional area:

Operations - Material condition walkdowns, housekeeping walkdowns, safety system lineups, chemistry control readiness, annunciator review, system status log requirements, action statement log requirements, temporary modification log status, post maintenance testing, selected critical valve third checks, and required startup training.

Maintenance - Material condition walkdowns, work order backlog, MOV issues, check valve issues, steam generator issues, preventative maintenance status, and electrical 4160V and 480V breakers.

Surveillance - Periodic testing program, ASME Section XI program, erosion/corrosion program, and Type B and C testing.

Engineering - EWR backlog review, Type 1 backlog review, technical reviews of DCPs and EWRs, MOV issues, snubbers, root cause evaluations, applicable JCOs, electrical terminations, ESF testing, control room habitability, instrument air system, drawing update, and cable separation.

Radiological Controls - Contaminated area reduction, personnel contamination reports, exposure evaluation, hot spot reduction, contamination controls, lead shielding, HP tech availability and effectiveness, and radiological engineering controls.

Safety Assessment - NRC commitments, CTS items, operational events, HPES recommendations, industry experience, North Anna Power Station startup issues review for applicability, TS changes, and SNSOC reviews of deviation report backlog.

After the completion of each review area, a listing of questions was generated and each superintendent was required to address these questions in the continuation of restart assessment meetings on June 18, 19, and 21, 1989. After the meeting on the 21st, a restart issues "punch list" was generated. This listing required that each outstanding issue be satisfactorily resolved prior to the indicated startup mode. In addition, on June 22, station management reviewed all outstanding safety-related work orders and deviation reports that were associated with Unit 1. The inspectors monitored the licensee's meetings and noted that the reviews were detailed and appeared to adequately address all outstanding issues.

h. Overview of Licensed Operator Training for Restart

On June 14, 1989, an inspector attended an information and training session for ROs and SROs. The meeting covered the following:

(1) Superintendent of Operations discussion of startup and operating philosophy.

(2) A summary of all the modifications performed during this extended outage.

(3) The new MOV program and the role of the licensed operators in this program.

(4) A review the changes in AP 37.01, Abnormal Environmental Conditions, with regards to actions to be taken during hurricane conditions.

(5) A summary of the changes to the following emergency procedures and an explanation of why the changes were made:

(a) EP 1.00, Reactor Trip/Safety Injection

(b) EP 2.00, Loss of Reactor or Secondary Coolant

(c) EP 2.04, Transfer to Hot Leg Recirculation

(d) Other minor changes to emergency procedures

The inspector observed the presentations by the training staff and the response of the operators and considered the training session to be adequate.

On June 26, 1989, the inspectors attended a training session for one of the operations shifts, which included the shift STA and licensed operators. The purpose of the training was to provide for startup practice on the plant simulator and to review recent industry events related to reactivity mismanagement. The inspectors believe that the classroom training session was conducted in an excellent manner and the preparation by the instructor was commendable. The inspectors also monitored the simulator startup training and believe that it was adequate.

The inspectors also discussed with the Operations Superintendent, the licensee's method for preventing unqualified operators from assuming a license duty. The licensee does not have an established program to administratively prevent a licensed operator from assuming the controls if the operator fails to requalify. The current philosophy that is used at Surry is to rely primarily on the integrity of the operator, coupled with good communications between the Training Center and the Operations Superintendent.

i. System Status Inspection

During this inspection period, the inspectors conducted a verification of the status of equipment identified as important by the Surry PRA. The inspector utilized the NRC draft report EEG-REQ-7746, dated July 1987, "PRA Applications Program for Inspection at the Surry Nuclear Power Station," as a guide to identify components that comprise significant contributions to risk during an accident. The inspector then determined the status of these components by reviewing the plant status logs, open work orders, open station deviations, outstanding retests and field walkdowns.

While performing a field walkdown on the backshift, the inspector encountered a contractor employee sleeping while on firewatch duty. This particular firewatch was established in Unit 2 safeguards after discrepancies were discovered regarding the area cable tray covers. Both units were in cold shutdown with no work in progress in this fire area. The inspector notified the control room and the firewatch was relieved of his duties. This particular firewatch was not required by TS; however, a station deviation report was submitted which will require resolution. The licensee corrective action for this occurrence was to terminate the employee; however, they are also reviewing the program to ensure that all necessary additional steps will be taken to assure proper firewatch attentiveness is maintained. Although this occurrence did not violate any regulations, the resident inspectors expressed their concern of this matter to station management and will continue to closely monitor the licensee's program for implementing an effective firewatch program.

Within the areas inspected, no violations or deviations were identified.

4. Operational Readiness Program Review - Unit 2 (71710)

The inspectors met with the Manager of Nuclear Engineering and the Manager of Licensing for a discussion about the licensee's plan for reducing the scope of the inspections for Unit 2 system walkdowns. The licensee stated that the areas where significant discrepancies were identified on Unit 1 are being evaluated for Unit 2. Common systems for both units are complete and 30 percent of the Unit 2 walkdowns have been completed.

After the inspection period ended, the licensee sent a letter to the NRC dated July 7, 1989, requesting that the scope of the remaining system walkdowns and electrical testing prior to Unit 2 restart be reduced based on the limited findings during the Unit 1 walkdowns and testing. The NRC is reviewing that request. The residents will monitor all required licensee actions in the system walkdown area prior to Unit 2 restart.

Within the areas inspected, no violations or deviations were identified.

5. Maintenance Inspections (62703 and 42700)

During the reporting period, the inspectors reviewed maintenance activities to assure compliance with the appropriate procedures. Inspection areas included the following:

a. EWR 89-458, MCR Air Bottle System Modification

During the performance of periodic test 1-PT-33.1, dated June 1, 1989, using the air bottle bank in MER3, insufficient air flow was obtained through the pressure regulators to maintain a positive pressure in the MCR envelope. The regulators were determined to be undersized for their intended function. An air

flowrate of approximately 300 scfm is required to maintain the pressure in the MCR envelope. The installed regulators provide a maximum flowrate of 100 scfm.

The licensee initiated the subject EWR to install regulators of sufficient rating to ensure the satisfactory completion of 1-PT-33.1. The EWR was reviewed by the inspector and was determined to be acceptable. Work was performed under work request 636730 and was monitored by the inspectors. No discrepancies were noted.

After unsuccessfully running PT-33.1 on June 28 (see paragraph 6.i.), the licensee modified the trim of the valves to provide a more consistent air flow throughout the test. The valves performed satisfactorily during the test on June 29.

b. EWR 89-462, Evaluate Ventilation System MCR Air Bottle System Capacity

Calculations by the licensee's engineering staff indicated that there was not sufficient capacity in the existing 72 air bottles to provide the required amount of air to the MCR for one hour. The calculations indicated that ten additional bottles per bank were required. EWR 89-462 was initially written to install the extra air bottles to provide the necessary volume of air and was subsequently revised to allow for the inspection/repair of the dampers for the MCR emergency ventilation fans.

The licensee elected to start with damper 1-VS-104A. This damper was removed and inspected on June 27. Gaps up to 0.75 inches were found between the damper and the duct. Also noted were gaps along the inner edge of the damper. These were due to the seating surface not extending completely (360) around the damper.

The damper was taken to the shop for repairs. The repairs consisted of fabricating a new section of duct that would fit snugly around the damper with a neoprene gasket between the damper and the duct. The licensee then sealed the junction with silicone sealant to minimize leakage between the damper and the duct. The seating surfaces were refurbished with new rubber gaskets and extended to provide sealing for 180 on each half of the damper.

After the repairs were completed, the damper was placed back in the system. The licensee then performed PT-33 to check if the repairs would be acceptable to allow for performance of PT-33.1 using the MER3 air bottles. This test was not satisfactory. The licensee then commenced work on damper 2-VS-204A.

Prior to completing work on 2-VS-204A, the licensee decided to attempt to run PT-33.1 using 72 air bottles in MER3 (see paragraph 6.i.). This test was unsatisfactory, and the licensee recommenced work on 2-VS-104A and began work on 1-VS-104B and 2-VS-204B.

During the time of repair on the above dampers, the licensee performed helium leak testing on penetrations in the cable vault rooms for both units. Unit 1 had ten leaking penetrations, and Unit 2 had eight. The inspector observed the sealing on some of these penetrations. The licensee used deviated procedure EMP-C-FP-23, Sealing of Fire Stops with Fire Resistant Silicone Foam, dated July 17, 1987, which was reviewed by the inspectors. It was noted that all of the fire resistant silicone foam containers examined had Category 1 tags which designated the purchase order and stock number.

On June 29, work on the dampers was completed as well as further repair of leaks in the boundaries. PT-33 was performed satisfactorily after the above mentioned repairs were complete. PT-33.1 was then performed satisfactorily using 82 bottles in MER3 (see paragraph 6.i.).

After reviewing the EWR data and the test results, the inspectors questioned the licensee as to how testing was being accomplished satisfactorily in the past based on present known problem areas and the necessary corrective actions that had to be accomplished to successfully pass the test. The licensee reviewed this area and concluded that testing in the past with the use of the air bottles as the pressure source had only been performed twice; once in 1986 and once in 1988. Testing prior to these dates was performed using one of the emergency ventilation fans as the air supply as allowed by TS. The recorded results of the past tests appeared to be satisfactory. However, during the present testing, the licensee assured that appropriate initial conditions were required to be recorded prior to commencing the test. Also, the present test requires that a 0.05 inches of water differential pressure be maintained for the test duration. In the past, only a positive pressure of 0.05 inches of water from the 0 reference on the gages was required. Since ventilation alignments could easily allow for the starting of the test with an initial positive reading, past testing may not have provided for a true test to verify 0.05 inches of water differential pressure. This conclusion was considered appropriate by the inspectors. However, this issue is again identified as a weakness in the licensee's original design and testing programs, which were discussed in the enforcement actions issued on May 18, 1989.

c. EWR 89-472, Evaluation of the Air Bottle Dump Test

After completing PT-33.1 on June 29 (see paragraph 6.i.), the licensee initiated this EWR to evaluate the results of the test. The stated purpose of the EWR was "to document the physical modifications to the MCR bottled air subsystem and document the justification for acceptance of the test results from PT-33.1."

Although the test was completed satisfactorily, the licensee determined that the margin of acceptance was not as good as it could have been. Because of this, engineering recommended that the pressure setpoints on 1-VS-PCV-531 and 532 be changed to obtain a higher air flowrate. Since the fan orifices used during the performance of PT-33 provided approximately 310 scfm, the pressure setpoints for the PCVs needed to be increased to provide 310 scfm in order to validate the future results of PT-33. Engineering also recommended that current efforts to identify and further seal electrical penetrations into the MCR envelope should continue. The inspectors also believe that additional evaluations of the capacity of the air banks are warranted. The tracking of these efforts to improve the integrity of the MCR envelope and determine if further modifications are warranted is identified as IFI 280, 281/89-20-01, MCR envelope pressurization improvements.

d. Repairs to 1-SI-P-1A, Unit 1 Low Head Safety Injection Pump

The inspector continued the review of maintenance activities associated with the return to service of the subject pump. Initial maintenance activities were discussed in NRC Inspection Report Nos. 280,281/89-08 and 89-13. The licensee experienced additional difficulties with this pump after correcting the original parts problem. The pump was subsequently disassembled several times due to the following:

- Mechanical seal problems.
- Level indicator rod in seal head tank bent.
- Pump binding after reassembly.
- Seismic support modifications.
- Bolt torquing specification problems.

The inspector monitored the licensee's efforts over the past three months regarding the repair of this pump, and discussed the problem areas with station supervision and management. The inspector was informed that a post maintenance evaluation will be conducted to review lessons learned in this area. The inspector will review the licensee's evaluation of the above maintenance activities and identifies this effort as IFI 280/89-20-02, followup on licensee evaluation of maintenance activities associated with the repair of 1-SI-P-1A.

Within the areas inspected, no violations or deviations were identified.

6. Surveillance Inspections (61726 and 42700)

During the reporting period, the inspectors reviewed various surveillance activities to assure compliance with the appropriate procedures as follows:

- Test prerequisites were met.
- Tests were performed in accordance with approved procedures.
- Test procedures appeared to perform their intended function.
- Adequate coordination existed among personnel involved in the test.
- Test data was properly collected and recorded.

Inspection areas included the following:

a. 1-ST-239, ESF Actuation with Instantaneous UV - J Bus

On June 5, 1989, the inspectors witnessed selected portions of the performance of special test 1-ST-239. The purpose of the test was to verify the sequencing of loads onto the 1J electrical bus following the injection of an ESF signal along with a simultaneous UV condition on the emergency bus. This test was conducted to verify that the required actuations take place, the required loads are tripped off the emergency bus, and that the appropriate loads are re-sequenced back onto the bus. During preparation for the test, the operators attempted to close the reactor trip breakers in accordance with step 5.14 of the procedure; however, the breakers would not close due to a reactor trip signal locked in from "C" SG channel 2 low level in coincidence with a steam flow/feed flow mismatch condition. The steam flow/feed flow mismatch condition was an instrumentation problem which had been previously identified for corrective action. It should be noted that SG level simulators had been installed on channels 1 and 3 for each SG in order to simulate a narrow range level of greater than 33%. This simulation would eliminate the SG low-low level trip signals so that the reactor trip breakers could be closed for the test. After the operators recognized the problem, a decision was made to remove the level simulators from channel 3 of the SG level instruments and reinstall these simulators on channel 2. This change would eliminate the steam flow/feed flow mismatch problem on channel 2 and allow for closing of the reactor trip breakers.

A change to the test procedure was submitted and approved by the station safety committee to accomplish this switchover. However, as soon as the instrument technicians removed the level simulator from channel 3 on the first SG, an ESF actuation occurred due to the protection circuitry sensing a low-low level condition in 2 of 3 channels on the respective steam generator. This condition caused the "B" train AFW pump breaker to close, the AFW isolation valves to open, and the SG blowdown isolation valves to close. The above ESF actuations occurred because the equipment had been positioned earlier to respond as part of the special test. At this point, the unit SRO suspended additional test preparations and a critique was called for by the Operations Superintendent to review the event.

The critique was conducted by the Station Manager and the above event was discussed in detail. At each point in the review process, the individuals were questioned as to why they did not recognize the potential problem that did occur when the level simulator was removed from channel 3. All personnel involved in the critique including the test director, instrumentation supervisors, operations supervisors, and the technical services superintendent, who presented the procedure change to the safety committee, stated that they understood the protection logic and consequences; however, a lack of attention to detail on the part of all involved led to the inadvertent ESF actuation. The Station Manager agreed with the conclusions of the personnel involved in the event and concluded that testing could resume; however, taking the time to do things right and attention to detail as the first orders of business was emphasized.

Testing preparations resumed, and after the day shift turnover and appropriate briefings, the actual test was conducted. The inspector independently verified that initial conditions, and selected steps in the performance section of the procedure were completed as required. The inspector also attended the critique meeting after the ESF actuation and agrees with the licensee's assessment that taking the time to do the job correctly and attention to detail were contributors to the event. The inspector monitored the actual performance of the test on the afternoon shift and observed that the test director was controlling test activities in a good manner. The inspector also noted that the problems identified during testing were properly documented with deviation reports and that test restoration was progressing in a satisfactory manner.

The inspector specifically reviewed the problem associated with the ESF actuation and considers that the procedure and/or instructions to swap the level simulators from channel 3 to channel 2 were inadequate in that they did not prevent the

inadvertent ESF actuation. However, the actual event had no adverse safety impact on the unit. Also, the fact that all involved recognized that they contributed to the problem because of their lack of attention to detail allowed for a conclusion on the part of the inspector that personnel sensitivity to problems of this nature was appropriate. The licensee did report the event to the NRC as required by 10 CFR 50.72. Failure to provide an adequate procedure to establish initial plant conditions for testing is a violation (NCV 280/89-20-03); however, the violation is not being cited because the criteria specified in Section V.A of the Enforcement Policy were satisfied.

b. 1-ST-232, Load Sequence Test - 1J Bus

On June 8, 1989, the inspectors witnessed selected portions of special test 1-ST-232. The purpose of the test was to functionally verify sequencing of loads onto emergency bus 1J following the injection of an ESF signal along with an UV on the emergency bus. The UV was injected after the outside recirculation spray pump had started from the initial ESF signal, which tripped required loads off the emergency bus, realigned the bus to the EDG, and re-sequenced the required emergency loads back onto the emergency bus.

The inspectors verified that selected initial conditions and testing prerequisite steps were performed as required, witnessed the pretest brief of personnel involved in the test, and witnessed the actual performance of testing from ESF signal initiation through UV signal initiation and finally through test restoration to a point where all safety-related pumps had been secured. The inspectors also noted that proper identification and documentation of test deficiencies were being accomplished. No discrepancies were noted.

c. Auxiliary Feedwater Testing

On June 15, the inspectors witnessed testing of the AFW system in accordance with test procedure 1-PT-15.9, Verification of Auxiliary Feedwater Flow to Each Steam Generator. The specific test evolutions witnessed by the inspector started AFW pump 1-FW-P-3B and verified that flow could be established to each SG. No discrepancies were noted.

d. Instrument Air Compressor Test

On June 20, the inspectors witnessed testing of the refurbished IA compressor 1-IA-C-1 in accordance with periodic test procedure STP-30, Instrument Air Compressor Surveillance. The purpose of this test was to ensure that the compressors can

perform their design function of supplying station instrument air loads during the loss of offsite power or loss of normal IA supply. The overall performance of the compressor was observed to be satisfactory, although minor adjustments were required for the control circuitry that loads and unloads the compressor. No outstanding discrepancies were identified.

e. Control Room Envelope Chiller Test

The inspectors continued to monitor testing of the control room envelope ventilation system in accordance with special test ST-235, Control Room Chiller Equipment Performance Test. This test provides baseline data on the performance of equipment necessary to maintain design temperatures in the control room and emergency switchgear room. The inspector expressed concern after observing indications that this equipment was still being operated and maintained in a manner similar to a non-safety related support system. This action contributed to at least two 10 CFR 50.73 reportable events during this inspection period. The licensee agreed with the observation and initiated steps to increase awareness of the importance of this system.

The inspector reviewed the final test results for the entire system and considers the results adequate. This review included several tests and evaluations from both the licensee and outside engineering firms and concluded with a June 24, 1989 memorandum from the system engineer to station management stating that the system was fully operable. The inspectors will continue to closely monitor this marginal system until an upgraded system is installed during the next refueling outage. No outstanding discrepancies were identified.

f. Differential Pressure Testing of 1-FW-MOV-151F (ST-270)

On June 17, 1989, the inspectors witnessed the d/p testing of one of the AFW MOVs (1-FW-MOV-151F). The test was conducted in accordance with special test ST-270. The inspectors verified that the test was being conducted in accordance with the procedure to include initial conditions, proper communications, and appropriate recording of test conditions. The inspectors also noted that the lead MOV engineer was present during testing to provide necessary assistance if needed. The test appeared to have demonstrated successful d/p operation of the valve. No discrepancies were noted.

g. Outside Recirculation Spray Pump Test

The inspectors reviewed the results of periodic test 1-PT-17.3, Containment Outside Recirculation Spray Pumps, performed on June 23 on 1-RS-P-2B. Data collection appeared to be adequate and the pump performed as desired. No discrepancies were noted.

h. CSD Test of the LHSI Lines to the Charging Pumps (1-PT-18.3E)

On June 20, the inspector witnessed functional testing of the flowpath from the A low head safety injection pump discharge piping to the suction piping of the high head safety injection/charging pumps in accordance with periodic test procedure 1-PT-18.3E. The test that was conducted did confirm that the appropriate flowpath was available as evidenced by an increase in pressurizer level. The inspector reviewed the completed test procedure after the testing was completed. No discrepancies were noted.

i. Control Room Pressure Test

The inspectors closely monitored the licensee actions to troubleshoot and perform a control room pressurization test as required by TS. This test, PT-33.1, requires the control room envelope to maintain a 0.05 inches of water differential pressure for a minimum of one hour. After performing maintenance on various door seals, dampers, and penetrations, the licensee successfully demonstrated a positive seal using a fan to simulate a bottle dump, which was accomplished by PT-33, yet could not achieve similar results with an independent train of bottles. Troubleshooting was complicated due to the duration (approximately 10 hours) to recharge a bottle bank after each trial run.

On June 26, after locating and repairing many leaking penetrations, the licensee ran PT-33 in an attempt to verify that the leakage had been reduced to an acceptable rate. The simulation with the fan did not indicate an improvement and further searching was done to locate leaking penetrations. Leaks were identified in the seals for the MCR envelope doors and were taped to reduce the leakage. This did not significantly improve the indicated pressure. Additional leakage was identified in the dampers from the MCR emergency ventilation fans (see paragraph 5.b.).

After some doors were repaired and the suctions to each of the MCR emergency ventilation fans were taped closed, the results of the testing using the 82 air bottle bank located in the Unit 1 cable vault indicated that a 0.05 inches of water differential pressure could be achieved and maintained for one hour in this configuration. The air bottles had 425 psig remaining at the end of the test. The licensee then opened and closed doors to the MCR envelope five times. Each time the differential pressure dropped off to zero and recovered to above 0.05 inches of water within thirty seconds. After the door operations were completed, the air bottle pressure was at 300 psig and the MCR differential pressure was above 0.05 inches of water.

On June 28, the licensee attempted to perform PT-33.1 using the 72 bottles in MER3. The test was unsatisfactory after the first set of data was taken and the values indicated less than 0.05 inches of water differential. The regulating valves were adjusted to increase the differential pressures to an acceptable level. When a differential pressure of greater than 0.05 inches of water was obtained, the regulating valves were adjusted to determine what effect they had on the pressure. The manipulation of the valves continued throughout the test until they were fully open with no effect on the pressure. After approximately 45 minutes the valves were fully open and the required flowrates began to decrease.

As a result of this test, the licensee decided to adjust the trim of the valves in order to obtain a more consistent flowrate throughout the test. In parallel, the licensee searched for and repaired several more leaks in the MCR envelope. The dampers for the MCR emergency ventilation fans were also repaired.

On June 29, PT-33 was completed satisfactorily prior to performing PT-33.1 using 82 bottles in MER3. PT-33.1 was then performed and after engineering evaluation of the results was declared a satisfactory test (see paragraph 5.c).

j. Surveillance Testing for Emergency Diesel Generator No. 3

The inspector reviewed periodic test 2-PT-22.3 C, Diesel Generator No. 3 Test, dated June 21, 1989, and witnessed part of the test for returning the diesel to service on June 25, 1989. Engineering had instrumented the diesel to test the frequency because of a high value in the previous test. After fast starting the diesel, the instrumentation indicated that the frequency was in the acceptable range. Several other adjustments were made to improve the diesel performance, none of which would affect the frequency. The diesel was then run for two hours and loaded onto the grid. The periodic test was completed in a satisfactory manner.

Within the areas inspected, one non-cited violation was identified.

7. Licensee Event Report Review (92700)

The inspectors reviewed the LER's listed below to ascertain whether NRC reporting requirements were being met and to determine appropriateness of the corrective actions. The inspector's review also included followup on implementation of corrective action and review of licensee documentation that all required corrective actions were complete.

LERs that identify violations of regulations and that meet the criteria of 10 CFR, Part 2, Appendix C, Section V shall be identified as NCV in the following closeout paragraphs. NCVs are considered first-time occurrence violations which meet the NRC Enforcement Policy for exemption from issuance of a Notice of Violation. These items are identified to allow for proper evaluations of corrective actions in the event that similar events occur in the future.

(Closed) LER 280/88-16, Pressurizer safety valve setpoints outside of allowable limits. The issue involved the drifting of the subject valves outside of the two percent operating band during the last cycle of operation. Corrective action included refurbishment and resetting of the lift setpoints to the proper band. The inspector reviewed the LER. This issue is further discussed in paragraph 8 of this report. This LER is closed.

8. Action on Previous Inspection Findings (92701)

(Closed) IFI 280,281/88-45-01, Followup on weaknesses identified in the licensee's corrective action program. The issues involved repeated wetting of AFW pump motors during periods of heavy rainfall, and inadequate evaluation of the failure mechanism of a containment isolation valve during repair. The issues were reviewed and determined to be applicable to the enforcement package that was issued to the licensee on May 18, 1989. Therefore, corrective actions associated with that package will address the issues identified in this area. This item is closed.

(Closed) IFI 280/89-06-05, Followup on licensee commitment to refurbish all 4160 volt safety-related circuit breakers prior to restart. The issue involved verification of completion of the subject commitment. The inspectors have monitored the refurbishment schedule for the past few months and have verified that the licensee has completed the subject action for Unit 1 as of June 19, 1989. This item is closed.

(Closed) IFI 280,281/89-13-01, Followup on resolution of pressurizer safety relief valve setpoint drift. The issue involved the possibility that the subject valves would drift out of their required TS setpoint tolerance during operation. The inspector discussed the issue with the licensee and determined that a TS change would be submitted to allow for a larger tolerance due to expected drift. The inspector also discussed the technical aspects of the amount of drift that has been experienced to date with Region II and NRR and has concluded that the amount of drift is not a concern. This item is closed.

9. Exit Interview

The inspection scope and findings were summarized on July 5, 1989, with those individuals identified by an asterisk in paragraph 1. The following new items were identified by the inspectors during this exit:

One violation was identified (paragraph 6.a) for failure to provide adequate procedure to establish initial plant conditions for testing (280/89-20-03). However, this violation meets NRC Enforcement Policy for not issuing a Notice of Violation and is not cited.

One IFI was identified (paragraph 5.c) for followup on MCR envelope pressurization improvements (280,281/89-20-01).

One IFI was identified (paragraph 5.d) for followup on licensee evaluation of maintenance activities associated with the repair of 1-SI-P-1A (280/89-20-02).

The licensee acknowledged the inspection findings with no dissenting comments. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

10. Index of Acronyms and Initialisms

AFW	-	AUXILIARY FEEDWATER
ANSI	-	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	-	ABNORMAL OPERATING PROCEDURE
ASME	-	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
CAD	-	COMPUTER AIDED DESIGN
CCW	-	COMPONENT COOLING WATER
CFR	-	CODE OF FEDERAL REGULATIONS
CLS	-	CONTAINMENT LOGIC SYSTEM
CSD	-	COLD SHUTDOWN
DPI	-	DELTA PRESSURE INDICATORS
DR	-	DEVIATION REPORT
EDG	-	EMERGENCY DIESEL GENERATOR
EMP	-	ELECTRICAL MAINTENANCE PROCEDURE
EP	-	EMERGENCY PROCEDURE
ESF	-	ENGINEERED SAFETY FEATURE
EWR	-	ENGINEERING WORK REQUEST
HP	-	HEALTH PHYSICS
HPES	-	HUMAN PERFORMANCE EVALUATION SYSTEM
HPSI	-	HIGH PRESSURE SAFETY INJECTION
IA	-	INSTRUMENT AIR
IFI	-	INSPECTOR FOLLOWUP ITEM
ISI	-	INSERVICE INSPECTION
JCO	-	JUSTIFICATION FOR CONTINUED OPERATION
LER	-	LICENSEE EVENT REPORT
LHSI	-	LOW HEAD SAFETY INJECTION
LOCA	-	LOSS OF COOLANT ACCIDENT
MER3	-	MECHANICAL EQUIPMENT ROOM 3
MOV	-	MOTOR OPERATED VALVE
MCR	-	MAIN CONTROL ROOM
NCV	-	NON-CITED VIOLATION
NRC	-	NUCLEAR REGULATORY COMMISSION
NRR	-	NUCLEAR REACTOR REGULATION
OP	-	OPERATING PROCEDURE
PCV	-	PRESSURE CONTROL VALVE

PRA	-	PROBABILISTIC RISK ANALYSIS
PSI	-	POUNDS PER SQUARE INCH
PSIG	-	POUNDS PER SQUARE INCH GAUGE
PT	-	PERIODIC TEST
QA	-	QUALITY ASSURANCE
RCS	-	REACTOR COOLANT SYSTEM
RO	-	REACTOR OPERATOR
RPS	-	REACTOR PROTECTION SYSTEM
RWP	-	RADIATION WORK PERMIT
RWST	-	REFUELING WATER STORAGE TANK
SCFM	-	STANDARD CUBIC FEET PER MINUTE
SER	-	SAFETY EVALUATION REPORT
SG	-	STEAM GENERATOR
SI	-	SAFETY INJECTION
SNSOC	-	STATION NUCLEAR SAFETY AND OPERATING COMMITTEE
SOV	-	SOLENOID OPERATED VALVE
SRO	-	SENIOR REACTOR OPERATOR
STA	-	SHIFT TECHNICAL ADVISOR
SW	-	SERVICE WATER
TS	-	TECHNICAL SPECIFICATIONS
UFSAR	-	UPDATED FINAL SAFETY ANALYSIS REPORT
URI	-	UNRESOLVED ITEM
UV	-	UNDERVOLTAGE