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

Report Nos.: 50-280/87-33 and 50-281/87-33

Licensee: Virginia Electric and Power Company
Richmond, Virginia 23261

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

Facility Name: Surry 1 and 2

Inspection Conducted: November 1 through December 4, 1987

Inspectors: R Cotton FOR 12/23/87
W. E. Holland, Senior Resident Inspector Date Signed

R Cotton FOR 12/23/87
L. E. Nicholson, Resident Inspector Date Signed

Approved by: 12/23/87
F. S. Cantrell, 2B Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine inspection was conducted in the areas of, plant operations, cold weather preparations, plant maintenance, plant surveillance, and licensee event report review.

Results: No violations or deviations were identified in this inspection report.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. L. Benson, Station Manager
*H. L. Miller, Assistant Station Manager
*E. S. Grecheck, Assistant Station Manager
J. A. Bailey, Superintendent of Operations
*D. J. Burke, Superintendent of Maintenance
S. P. Sarver, Superintendent of Health Physics
*R. H. Blount, Superintendent of Technical Services
R. L. Johnson, Operations Supervisor
*J. A. Price, Site Quality Assurance Manager
J. B. Logan, Supervisor, Safety and Licensing
*G. D. Miller, Licensing Coordinator

*Attended exit meeting

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

2. Exit Interview

The inspection scope and findings were summarized on December 4, 1987, with those individuals identified by an asterisk in paragraph 1. The following new items were identified by the inspectors during this exit.

One inspector followup item was identified for followup and review of the evaluation for auxiliary feedwater pump discharge piping movement during normal system operation (280/87-33-01).

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

3. Plant Status

Unit 1

Unit 1 began the reporting period at power. A steam leak developed on the secondary manway of the "C" steam generator that required the unit to ramp down on November 25 and go off-line the next day. The unit was subsequently placed in cold shutdown and the manway gasket replaced. The unit returned to power operation on December 3 and operated at power for the remainder of the reporting period.

Unit 2

Unit 2 began the reporting period at power. The unit operated at power for the duration of the inspection period.

4. Licensee Action on Previous Enforcement Matters (92702)

This item was not addressed during this inspection period.

5. Unresolved Items

No new unresolved items are identified in this report.

6. Plant Operations

Operational Safety Verification (71707)

The inspector conducted daily inspections in the following areas: Control room staffing, access, and operator behavior; operator adherence to approved procedures, technical specifications, and limiting conditions for operations; examination of panels containing instrumentation and other reactor protection system elements to determine that required channels are operable; 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 inspector conducted weekly inspections in the following areas: Verification of operability of selected ESF systems by valve alignment, breaker positions, condition of equipment or component(s), and operability of instrumentation and support items essential to system actuation or performance.

Plant tours 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 monitor the temperature of the auxiliary feedwater pump discharge piping to ensure steam binding is prevented.

The inspector conducted biweekly inspections in the following areas: Verification review and walkdown of safety-related tagout(s) 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 lineup(s); and verification that notices to workers are posted as required by 10 CFR 19.

Certain tours were conducted on backshifts or weekends. Backshift or weekend tours were conducted on November 4, 6, 12, 17, 19, 23, 27, 29, & 30. Inspections included areas in the Units 1 and 2 cable vaults, vital

battery rooms, Steam Safeguards areas, emergency switchgear rooms, diesel generator rooms, control room, auxiliary building, cable penetration areas, independent spent fuel storage facility, low level intake structure, and 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, radiation work permits (RWPs) were reviewed and specific work activities were monitored to assure they were being conducted per the RWPs. Selected radiation protection instruments were periodically checked, and equipment operability and calibration frequency were verified.

The Plant Risk Status Information Management System (PRISIM) was used by the resident inspectors during this inspection period to determine inspection priorities. PRISIM was consulted on a daily basis in order to continue with its evaluation. Daily logs were used by the residents to identify strong and weak points in the program. The residents selected entry paths into PRISIM based on their daily review of safety-related equipment status, review of maintenance work in progress, review of current surveillance activity, and review of licensee event report (LER) closeout with regard to maintenance events listed in the program. During this months evaluation, a potential problem was identified with regard to recirculation flow for the Low Head Safety Injection Pumps. The issue, which was identified by the NSSS vendor, indicated a potential problem during operation of both pumps without adequate recirculation flow which could cause damage to one of the pumps. During the PRISIM review of the Low Head Safety Injection System, the inspector noted that a medium size break in the reactor coolant system without low head safety injection available would have unacceptable consequences with regards to mitigating the event. Additional time was therefore spent on the evaluation of the potential problem. The licensee interim actions, which included criteria for stopping one pump was considered adequate pending evaluations to determine permanent corrective action.

On November 18, the monthly periodic test (PT) to verify operability of the Unit 1 turbine driven auxiliary feedwater pump (1-FW-P-2) was performed. The results of the PT determined that the pump was inoperable due to bearing lubrication oil spraying out of the pump outboard bearing. The unit entered a 72 hour LCO and troubleshooting of the problem was initiated. The resolution to the problem was to verify that all bearing drain lines to the lube oil sump were clear and to lower oil level in the sump to minimize oil drainage resistance; however, the licensee was not able to determine the specific cause of the problem, or cause the condition to repeat. The inspector witnessed testing of the pump in accordance with the PT on November 19, and also witnessed additional verification testing of the pump in accordance with operational procedure (OP) on November 20. Based on the results of the testing, the pump was declared operable and the LCO was exited. However, during operational testing of the pump on November 20, the inspector observed that the auxiliary feedwater pump(s) discharge piping exhibited what appeared to be unusual movement when the pump was running in accordance with

the OP. After the test, the inspector requested that the licensee provide an evaluation to verify that the amount of pipe movement during operational testing was not excessive.

On December 2, the turbine driven auxiliary feedwater pump (1-FW-P-2) was again run in accordance with operating procedure during restart of Unit 1 as required to verify flow to the steam generators. Licensee engineering personnel were present during the run to observe discharge pipe movement and to obtain data for analysis. The inspector also observed the pump run. Initial engineering evaluation of the pipe movement was that it appeared to be unusual for the system. However, pipe movement was allowed in the system and the observed movement was not considered to be an immediate operational concern. Further analysis would be required in order to determine if this movement was acceptable for long term operation. At the end of the inspection period the report on analysis of the data was not available for the inspector to review. This item is identified as an inspector followup item (280/87-33-01) for followup and review of the evaluation for auxiliary feedwater pump discharge piping movement during normal system operation.

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.

The inspectors witnessed the unit 1 startup and return to power operations performed on December 2 and 3.

Engineered Safety Feature System Walkdown (71710)

The inspector performed a walkdown of the accessible areas of the safety related portions of the Low Head Safety Injection and Outside Recirculation Spray Systems for unit 2 to verify their operability. This verification included the following: confirmation that the licensee's system lineup procedure matches plant drawings and actual plant configuration; hangers and supports are operable; housekeeping is adequate; valves and/or breakers in the system are installed correctly and appear to be operable; fire protection/prevention is adequate; major system components are properly labeled and appear to be operable; instrumentation is properly installed, calibrated, and functioning; and valves and/or breakers are in correct position as required by plant procedure and unit status. Discrepancies that were noted were immediately addressed in an adequate manner by the licensee.

Cold Weather Preparations (71714)

During this inspection period, the inspectors reviewed the licensee's program for implementation of protective measures for extreme cold weather. The program is implemented by performance of monthly periodic

test (PT) 52 "Cold Weather Protection". The PT is required to be performed during the months of November, December, January, February, and March. The inspector reviewed PT-52 which was performed during the month of November and determined that discrepancies were being identified as required. The inspector also verified that the PT inspected systems susceptible to freezing to insure the presence of heat tracing, space heaters, and/or insulation. The inspector then selected several of the listed discrepancies and verified that timely corrective action was being initiated. This verification included an independent walkdown of selected safety-related areas to insure that conditions were as stated. No discrepancies were noted.

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

7. Maintenance Inspections (62703)

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

Unit 1 Containment Spray Pump Preventative Maintenance

On November 17, the Unit 1 containment spray pump (1-CS-P-1A) was tagged out to perform preventative maintenance in accordance with an approved procedure. The work was performed using preventative mechanical maintenance procedure CS-P-M/2A, "Containment Spray Pump Lubrication, Cleaning and Operational Checks". The inspector reviewed the procedure, verified that the component was properly tagged out and that the proper LCO was entered when the component was taken out of service. The inspector also reviewed the completed work package and verified that preventative maintenance was done in accordance with the procedure, that appropriate attention was given to complete the work in a reasonable timeframe, and that proper testing was conducted on the pump after the maintenance was completed. No discrepancies were noted.

Unit 1 - Repacking of the Reactor Coolant System Loop Stop Valves

During the forced outage for Unit 1, the licensee was required to repack two of the reactor coolant system loop stop valves (Motor Operated Valves 1-RC-1594 and 1-RC-1595) due to observed leakage past the packing after the valves were positioned off of their backseats. This maintenance was conducted in accordance with approved procedures and completed prior to Unit heatup. The inspector reviewed the procedures as follows:

- Repacking of 1-RC-MOV-1594 was accomplished in accordance with Mechanical Corrective Maintenance Procedure MMP-C-G-156, "Valve Packing in General (with exception of Chesterton Packing) Safety Related". The inspector reviewed the completed procedure and discussed the maintenance evolution with the maintenance supervisors and the craft that had performed the work.

- Repacking of 1-RC-MOV-1595 was accomplished in accordance with Mechanical Corrective Maintenance Procedure MMP-C-RC-105, "30 Inch Darling Loop Stop Valves Disassembly, Repair, Reassembly, and Packing Safety Related". The inspector reviewed the completed procedure and discussed the maintenance evolution with the maintenance supervisors and the craft that had performed the work.

Based on the inspectors review of the procedures, both repacking jobs were completed in accordance with the procedure and the procedures documented satisfactory accomplishment of the work. The inspector noted that the loop stop valves required continual maintenance due to packing leakage based on observations during the last 6 to 9 months and that maintenance on the valves relating to packing required work in a relatively high radiation/contamination area. Maintenance management informed the inspector that the packing design for the loop stop valves was under review and that resolution of past problems should be implemented during the upcoming refueling outages for both units. The inspector will review this area during the upcoming refueling outages as part of the routine outage inspection program.

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

8. Surveillance Inspections (61726)

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:

Turbine Inlet Valve Test

On November 3, 1987 the inspector witnessed the performance of turbine inlet valve freedom of movement testing in accordance with test procedure 1-PT-29.1, "Turbine Inlet Valve Test". Inspection report 280/281 87-21 discussed a commitment in the UFSAR, Section 14.2.13, that requires periodic tests to ensure freedom of valve movement. The licensee has acknowledged that this testing has not been performed as required, and upgraded the above test procedure to perform the test at power. The test witnessed by the inspector was the first attempt to perform this evolution at power. The unit was ramped down to less than 75% power and each

governor and stop valve cycled to full closure. All equipment functioned as required and the unit was returned to full power operation. This will be a monthly test in the future.

Containment Spray Pumps

On November 4, 1987, the inspector conducted an unannounced backshift inspection to witness the performance of the monthly surveillance test 1-PT-17.1, "Containment Spray System". This test was performed on both unit 1 pumps 1-CS-P-1A & B as required by Technical Specification 4.5. All plant equipment appeared to function as required during this test. The inspector independently verified each acceptance criteria for both pumps. All operators involved appeared to be knowledgeable in the performance of the test with good communications between the control room and pump room.

Emergency Diesel Generator

On November 6, 1987, the inspector witnessed the monthly operability run of the emergency diesel generator #1 in accordance with test procedure 1-PT-22.3A. The generator was started and loaded with no apparent discrepancies, however, the licensee did have a vendor representative observe the diesel performance to pinpoint the cause of slightly higher than normal vibrations noted on the generator end. The vendor stated that the generator should be considered fully operable, but suggested some additional work to be performed during the refueling overhaul to reduce the vibration. No specific criteria exits for vibrational limits.

Emergency Service Water Pumps

The inspector reviewed the approved results of surveillance test 1-PT-25.3, "Emergency Service Water Pumps" performed during the last two years. This test demonstrates operability of service water pumps 1-SW-P-1A, B & C that are needed to ensure an adequate water inventory in the intake canal for long term cooling following loss of offsite power. No discrepancies were noted.

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

9. Followup on Inspector Identified Items (92701)

No followup items were addressed during this inspection period.

10. Licensee Event Report (LER) Review (92700)

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

LERs that identify violation(s) of regulation(s) and that meet the criteria of 10 CFR, Part 2, Appendix C, Section V shall be identified as Licensee Identified Violations (LIV) in the following closeout paragraphs. LIVs are considered first-time occurrence violations which meet the NRC Enforcement Policy criteria for exemption from issuance of a Notice of Violation. These items are identified to allow for proper evaluation of corrective actions in the event that similar events occur in the future.

(Closed) LER 280/87-023, Inadvertent Auto Start Of Standby Charging Pump Due To Personnel Error. This LER reported the automatic start of the standby charging pump (1-CH-P-1A) when an instrument technician inadvertently isolated the charging pump discharge header pressure transmitter and therefore introduced a low discharge header pressure signal. The technician intended to be working on pressure transmitter PT-BR-121, but instead isolated transmitter PT-1-121. The licensee performed a Human Performance Evaluation System (HPES) investigation and determined that many human factors contributed to the human error. The inspector reviewed the HPES report and discussed the findings with the author. This item is closed.

(Open) LER 280/87-024, Reactor Trip On Low RCS Flow Due To Reactor Coolant Pump Trip. This LER reported a reactor trip from 100% power due to the "B" reactor coolant pump breaker tripping on instantaneous ground fault. Inspection of the motor leads revealed a complete separation of the 'A' phase main load connection bus bar. The inspector reviewed the anomalies associated with this event as reported in the LER and determined that the licensee performed an adequate review and correction of the items. The licensee is preparing an engineering evaluation to determine the bus bar failure mechanism, therefore this item will remain open pending issuance and review of this report.

(Closed) LER 281/87-04, Containment Isolation Valve Inoperable Due To Ruptured Diaphragm In Air Pilot Relay. This LER involved the Unit 2 containment isolation valve for the component cooling water (CCW) outlet header. The valve, 2-CC-TV-209B, failed to close when a manual signal was initiated from the control room in accordance with the routine surveillance procedure. A diaphragm in the air pilot relay was determined to be ruptured, allowing the closing air to escape out the pilot valve vent port instead of closing the trip valve. The inspector examined the valve assembly immediately following the determination that it was inoperable, and observed the licensee actions regarding administrative controls. A review of the LER data base provided in the PRISIM program did identify several previous LERs reporting failures of a similar nature. The inspector identified these to the licensee and discussed a need to improve the station history files. This item is closed.