UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-280/81-17 and 50-281/81-17

Licensee: Virginia Electric and Power Company
Richmond, VA 23261

Facility Name: Surry Units 1 and 2

Docket Nos. 50-280 and 50-281

License Nos. DPR-32 and DPR-37

Inspection at Surry site near Surry, Virginia

Inspector: H C Dance /for — 6/19/81
D. J. Burke — Date Signed

Approved by: H C Dance — 6/19/81
H. C. Dance, Section Chief, Division of Resident and Reactor Project Inspection — Date Signed

SUMMARY

Inspection on May 1-29, 1981

Areas Inspected

This inspection involved 90 resident inspector-hours on site in the areas of plant operations and operating records, plant maintenance, calibration and testing, fire protection, plant security, and followup on LER's.

Results

Of the six areas inspected, no violations or deviations were identified in five areas; one violation was identified during inspection of fire protection barriers (Nonfunctional fire doors without fire watch - paragraph 5.d).

DETAILS

1. Persons Contacted

Licensee Employees

*J. L. Wilson, Station Manager
*R. F. Saunders, Assistant Station Manager
*G. E. Kane, Operations Superintendent
*D. A. Christian, Superintendent of Technical Services
L. A. Johnson, Maintenance Superintendent
S. P. Sarver, Health Physics Supervisor
F. L. Rentz, Resident QC Engineer

Other licensee employees contacted during this inspection included control room operators, shift supervisors, QC, HP, plant maintenance, security, engineering, chemistry, administrative, records and contractor personnel.

*Attended exit interview

2. Management Interviews

The inspection scope and findings were summarized on a biweekly basis with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Unit 1

Unit 1 remains shutdown for the Steam Generator Replacement Project (SGRP).

a. The SGRP is essentially complete, and preoperational testing of the Unit 1 system is in progress. Prior to refueling, the inspectors reviewed Periodic Tests (PT's) and witnessed certain special and periodic tests to verify that the required systems were operable for refueling operations. Portions of the following PT's were reviewed:

PT 1.1, Nuclear Instrumentation
PT 8.2, CLS Logic
PT 18.2, SI
PT 18.1, LHSI
PT 22.3, EDG's
PT 26.3, Radiation Monitors
PT's 30.1 and 30.2, RHR

Special Test 109, Integrated Engineered Safeguards Functional Test, was witnessed, as well as the closure of the containment purge valves (MOV-100A-D) on high radiation signals. One of the purge valves (MOV-100A) did not cycle properly and was isolated. Within the areas inspected, no violations were identified.

b. Refueling of Unit 1 commenced on May 28, 1981, and was completed on May 31, 1981. During this time, the inspector observed refueling activities to verify that they were being conducted in accordance with the plant Technical Specifications (TS) and procedures. Appropriate licensed personnel were utilized during fuel movement and direct communication was maintained between the control room and the refueling area; the cavity boron samples were within TS 3.10 limits, the source range detectors were in service, and the containment access hatches were properly installed. The licensee had previously revised OP-4.1, Containment Integrity Checklist, to address the use of the blank flange on the equipment hatch. Although the personnel access hatches were operable, personnel entrance and egress was impeded by intermittant problems with the door limit switch lights and the inner door locking pin. Corrective maintenance on the doors is in progress. The fueling cavity was at the proper water level (27 feet $\pm$ 6 in.); however, the skimmer was below the surface of the water; refueling personnel adjusted the skimmer to remove the dust and traces of oil from the water surface. The refueling area was appropriately petitioned off and isolated from the other work areas and personnel in containment. Within the areas inspected, no violations were identified. Prior to refueling, the inspector also observed portions of the 10 year reactor pressure vessel inspection. The complete results of the inspection are being reviewed by Region II metallurgical inspectors.

c. At approximately 7:00 a.m. on May 28, 1981, during thunderstorms, the licensee noted rainwater leaking into the Unit 1 control room, behind the vertical board. Holes had apparently been inadvertently punched in the Service Building (SB) roof by erected scaffolding legs during a plant modification in that area. The rainwater fell four stories through the SB electrical room, the cable vault area, and the control room, to the emergency switchgear room in the basement. Water was also observed in the reactor trip breaker cubicle above the control room. On May 28 and 29, 1981, several inches of standing water was observed in certain Unit 1 turbine building basement areas such as the valve pits and clean and used oil room. Significant amounts of rainwater apparently flooded into the turbine building basement from the louvered air intake structure in the turbine building basement due to plugged drains. In addition, wet floors were observed in an Emergency Diesel Generator rooms and in the Auxiliary Building. The inspector has observed additional rainwater leakage and certain flooding in areas and buildings at Surry during periods of heavy rainfall. His initial concern regarding leakage was identified in IE Inspection Report Nos. 50-280/80-43 and 50-281/80-47, when rainwater leaks in the Unit 2 Safeguards Building roof and roof plugs led to electrical shorting and

inoperability of the low head safety injection pump 2-SI-P-IA. Subsequently, several leaks in the Service and Auxiliary Buildings have been observed. A recent Unit 2 LER (81-17) illustrated moisture accumulation in an electrical junction box which led to shorting of a Train B coil for the main steam trip valve (TV-MS-201C) control circuits. Some of the rainwater also flows into contaminated areas and sumps which increases the amount of liquid to be inventoried, processed, and disposed through the liquid waste system. In addition, on May 28 and 29, 1981, the plant security vital door access system was inoperable due to flooding of electrical cable trenches and conduit for the key card access systems, although proper compensatory actions were taken by the security forces for access to the vital areas. The rainwater leaks (and flooding) are designated open item 280/81-17-02 pending review of the corrective actions, inspections, or measures the licensees implements to assure that leaks are promptly identified and corrected. This item was brought to the attention of corporate management by regional management.

d. Certain fire barrier doors at Surry are on the security key card access system to control or limit access to these areas, although the areas are not VITAL areas. When the key card access system was inoperable, as described above in paragraph 5.c, security personnel were posted at vital area doors to control access into the vital areas. However, access of station personnel rooms was also necessary, so the non-vital doors were put in access by defeating the latching devices. Although the swinging type doors had closers, the following fire doors (barriers) were not functional on May 28, 1981, due to inoperable latching devices: Doors 37, 39 and 41 leading from the mezzanine into the three emergency diesel generator room; door 21 between the turbine building and the emergency switchgear room; door 10 into the cable spreading room above the control rooms.

The nonfunctional fire barriers without a continuous fire watch is a violation of Technical Specification 3.21.G (280/ and 281/81-17-01), and applies to both Units. The licensee subsequently made the doors operable or established a fire watch.

On May 28, 1981,the inspector also observed the emergency exit (rear) door from EDG#1 room open to the outside yard area. The fire watch posted at the door stated that the EDG room contained fuel oil fumes and was being aired out so welders could work on the EDG exhaust supports. The inspector noticed that the welders were preparing to work in an area above the EDG auxiliary fuel oil day or wall tank catch basin, which consisted of an 18 inch concrete dike rising from the floor under the tank. Some 100 to 200 gallons of fuel oil were emptied into the catch basin when water was detected in the EDG fuel oil supply tanks (See paragraph 6.C.). Due to the possibility of sparks or weld slag falling into the fuel oil in the catch basin, the Shift Supervisor prohibited welding on the supports until the basin was pumped out. The inspector had no further questions at this time.

6. Unit 2 Operations

Unit 2 operated at power during May, 1981, except for the reactor trip discussed below. During this time, the inspector routinely toured the Unit 2 control room and other plant areas to verify that the plant operations, testing and maintenance were being conducted in accordance with the facility technical specifications and procedures. Within the areas inspected, no additional violations were identified. Specific areas of inspection and review included the following:

a. Review of annunicated alarms in the control room and inspection of safety-related valve and pump alignments on the consoles and in the plant.

b. Followup on the Unit 2 reactor trip which occurred at 11:40 a.m. on May 5, 1981. With Unit 1 defueled and Unit 2 operating at full power an electrical breaker (15H8) was closed to return the Unit 1 emergency buss 1H to service following preventative maintenance and testing. Electrical fault protection interlocks sensed the coincidence of 15H8 being closed and undervoltage on the 1H buss, and opened the reserve station service (RSS) breaker to the F transfer buss which feeds the Unit 1H and the Unit 2J busses. When the 2J buss was de-energized, the C main feedwater (FW) regulating valve controller shifted from auto to manual, and the momentary loss of 2J and vital buss 2-IV initiated a RPI turbine runback. This combination soon resulted in a low steam generator C level, which initiated the reactor trip. The EDG auto started and re-energized the 2J buss as required, but the FW regulating valve controller was not returned to auto before the low low SG level trip occurred. The reactor and turbine trip results in the loss of station power, and therefore the C reactor coolant pump power was lost because the F transfer buss could not transfer to RSS. The ensuring plant shutdown was normal, and restart was made within a few hours after the electrical systems were restored to normal. Personnel have been reinstructed on the proper use of procedures for placing these electrical busses and breakers into service; the procedures describe the use of jumpers to momentarily bypass the UV interlock when the breaker is closed onto the buss to supply power.

c. The inspector followed up on the May 28, 1981, discovery of water in one of the two underground fuel oil tanks for the emergency diesel generators (EDG). Several hundred gallons of water were found in the 20,000 gallon fuel oil tank EE-TK-2A. Traces of water (less than 1%) were also found in the 550 gallon auxiliary (day) tanks in each EDG room; no water was found in the 550 gallon base tanks on each EDG. Previously on May 10, 1981, some 4,000 gallon of fire protection system (FPS) water was inadvertently pumped into the above ground 210,000 gallon fuel oil storage tank (HS-TK-1) through a FPS foam eductor to the tank due to mispositioned valves. The storage tank was isolated from the underground tanks until the water was removed, however, the underground (UG) tanks were not sampled at this time. In addition, the inspector observed that the LI-EE-100A and B manometers, which

indicates the levels of fuel oil in the underground tanks, were inoperable. The licensee opens the valve between the above ground storage or head tank and the UG tanks daily and monitors flow to each tank (or lack of flow) to verify that the underground tanks are full. This method of verifying that the UG tanks are full apparently led to the flow of water to the UG tank. the licensee is repairing the UG tank level manometers. (Open item 280/81-17-03). The inspector verified that an on-site supply of at least 35,000 gallons of fuel oil were available in accordance with TS 3.16.A.1. The day tanks in each EDG room were flushed into the FPS diked catch basin beneath each tank to assure that the lines and day tanks contained no water; samples of various fuel oil tanks also indicated no further presence of water. In addition, since the UG tank A suction line is 6 inches above the tank bottom, the licensee will insert a pipe into the A tank and pump out the tank bottom to assure that the water has been eliminated. A LER will be submitted on the occurrence.

7. Licensee Event Reports (LERs)

The inspector reviewed the LERs listed below to ascertain that NRC reporting requirements were being met and to determine the appropriateness of corrective action taken and planned. Certain LERs were reviewed in greater detail to verify corrective action and determine compliance with the Technical Specifications and other regulatory requirements. The review included examination of log books, internal correspondence and records, review of SNSOC meeting minutes, and discussions with various staff members. Within the areas inspected, no violations were identified.

LER 280/81-01 concerned linear indications in loops A, B and C main steam piping found during RT examination. Pitting corrosion from stagnant oxygenated water present during period of shutdown was the apparent cause. "Boat Samples" from A and C Main Steam piping were sent to Stone and Webster for detailed analysis. Results showed no cracks were present, only pitting corrosion in portions of the pipe where steam condensate was present. The indications found were allowable per ASME Section XI, and were substantially less that the critical flaw size described in FSAR, Appendix D. Visual examination of one Unit 2 steam line during the snubber inspection outage revealed only a slight amount of pitting which was removed with light surface buffing. The Unit 1 areas have been repaired. This LER is considered closed. The following LER's were reviewed and closed:

280/80-10	280/80-74	281/80-06	281/81-07	281/81-17
280/80-13	280/81-02	281/80-11	281/81-08	281/81-18
280/80-20	280/81-03	281/80-12	281/81-09	281/81-19
280/80-22	280/81-04	281/80-47	281/81-10	281/81-20
280/80-42	280/81-05	281/80-49	281/81-11	281/81-21
280/80-62	280/81-06	281/80-50	281/81-12	281/81-23
280/80-63	280/81-07	281/81-01	281/81-13	281/81-24
280/80-68	280/81-08	281/81-02	281/81-14	281/81-25
280/80-73		281/81-03	281/81-15	281/81-26
			281/81-05	281/81-16

8. Security

The inspector verified the following by observations:

a. Gates and doors in protected and vital area barriers were closed and locked when not attended.

b. Isolation zones described in the physical security plans were not compromised or obstructed.

c. Personnel were properly identified, searched, authorized, badged and escorted as necessary for plant access control.