



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-280/80-34 and 50-281/80-37

Licensee: Virginia Electric and Power Company
Richmond, Virginia 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: *D. J. Burke*
D. J. Burke

10/15/80
Date Signed

Approved by: *P. J. Kellogg*
P. J. Kellogg, Section Chief, RONS Branch

10/17/80
Date Signed

SUMMARY

Inspection on July 7 - August 29, 1980

Areas Inspected

This routine inspection by the resident inspector involved 190 inspector-hours on site in the areas of plant operations and operating records, plant modifications, maintenance and testing, Licensee Event Reports, and plant security.

Results

Of the four areas inspected, no items of noncompliance or deviations were found in three areas; four items of noncompliance were found in one area (Infraction - failure to maintain certain SI instrumentation operable as required by TS 3.7; Infraction - failure to follow procedures for removing safety related equipment from service; Deficiency - failure to report the inoperable SI instrumentation to the NRC within one hour in accordance with 10 CFR 50.72 (a)(6); and Infraction - failure to revise instrument surveillance procedures following instrument setpoint changes - Paragraph 6). Of the four noncompliances the license did not agree with the deficiency - failure to report the inoperable SI instrumentation to the NRC with one hour in accordance with 10 CFR 50.72(a)(6).

DETAILS

1. Persons Contacted

Licensee Employees

- *J. L. Wilson, Station Manager
- *G. Kane, Superintendent, Operations
- *T. A. Peebles, Superintendent, Technical Services
- *R. F. Saunders, Assistant Station Manager
- *L. A. Johnson, Superintendent, Maintenance
 - R. M. Smith, Supervisor, Health Physics
- *F. L. Rentz, Resident QC Engineer
 - D. J. Fortin, Engineering Services Superintendent

Other licensee employees contacted during this inspection included control room operators, shift supervisors, QC, HP, plant maintenance, security, engineering, chemistry, administrative, 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; items of noncompliance were specifically discussed with the licensee when identified.

3. Licensee Action on Previous Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Unit 1 Operations

The inspector routinely toured the Unit 1 control room and other plant areas to verify that the operations and maintenance activities were being conducted in accordance with the Technical Specifications (TS) and facility procedures. Plant logs, records and tests were also reviewed. Within the areas reviewed, no items of noncompliance or deviations were identified. Specific areas of inspection and review included:

- a. Review of the July 19, 1980 boration of the reactor coolant system (RCS) due to boric acid leakage by the emergency borate valve MOV-1350. Power was reduced from 100% to about 25%, and the axial flux deviated

from the target band, requiring restricted power operation (below 50%). A spare valve disc for MOV-1350 was not available, so the valve was blank flanged. Two boration paths, in addition to the RWST, are available in accordance with TS 3.2.B.

- b. Inspection of activities concerning the Unit 1 steam generator tube leak which exceeded 0.3 gpm on July 31, 1980; the Unit was taken to the cold shutdown condition within 24 hours as required by the license conditions. Tube plugging operations were completed and Unit 1 was returned to operation on August 10, 1980.

On August 13, 1980, the low pressure turbine bearing No. 5 vibration increased from 2 to 9 mils, and has been stable since that time. The licensee plans an end-of-life coastdown on Unit 1 until September 19, 1980.

- c. Inspection of maintenance on certain safety-related heat tracing, valves, and pumps.

6. Unit 2 Operations

The inspector reviewed certain Unit 2 periodic testing and plant evolutions to verify that they were conducted in accordance with the plant Technical Specifications, licensee commitments, and facility procedures. Unit 2 was taken critical on August 14, 1980, and is currently at 50% of power. Specific areas of inspection and review included:

- a. Review of various periodic and startup tests completed prior to Unit 2 startup; tests without specific acceptance criteria were reviewed by engineering personnel to determine acceptability, and many of the tests were repeated to assure acceptable baseline data for the ISI program.
- b. Review of the Unit 2 return to criticality following the 18 month steam generator replacement outage. The reactor was taken critical at 12:08 p.m. on August 14, 1980. The inspector noted that the reactor went critical near the rod insertion limits of TS 3.12.A.2 because the most recent reactor coolant system boron concentration was not used in the ECP calculation, which was completed on the previous day to prepare for startup. However, the licensee did utilize inverse multiplication graphs for the approach to criticality, and ECP revisions were made during the startup. Within the areas inspected, no items of noncompliance were identified.
- c. Review of the reactor trips and manual shutdowns that occurred between August 14 and August 28, 1980. One reactor shutdown was initiated when the Unit 2 refueling water storage tank (RWST) and chemical addition tank (CAT) were observed to be below TS 3.4.2.A.3 and 4 minimum levels. The inspector noted that Periodic Test 36, "Instrument Surveillance", which the operators use twice per shift to verify and

document that instrument indications comply with the Technical Specifications (TS), was not appropriately revised to reflect the current TS RWST and CAT levels of 96% and 97% respectively. In addition, the RWST low level alarm apparently did not annunciate when the borated water level dropped below 96%. Failure to revise PT 36 prior to Unit 2 startup is contrary to TS 6.4.A, and is an infraction (281/80-37-01).

- d. Review of the Unit 2 main steamline flow instruments (FL 2474, 2475, 2484, 2485, 2494, and 2495) which were found isolated and inoperable. At 12:30 a.m. on August 19, 1980, licensee personnel noted that the steamline flow instrumentation was not responding with the Unit at 12% power (The instrumentation displays steam flow in millions of pounds per hour and normally comes on scale between 10 and 15% power). The licensee stated that the six channels were placed in the conservative trip mode approximately one hour after the discovery at 12:30 a.m. One out of two high steamline flow channels in two out of three steamlines in coincidence with low tavg or low steamline pressure initiates safety injection (SI) and steam line isolation. Although the tripped channels could have presented a challenge to the SI system, low tavg or steam line pressure did not occur; reactor power was increased to a more stable plateau (approx. 35%) by 2:00 a.m. The electrical power fuses were found to have been removed, isolating power to the steam flow instruments, and the flow transmitters were isolated (valved out) from the steamlines, although the root valves were open. Electrical power was restored and the transmitters valved in at approximately 4:15 a.m. on August 19, 1980, during a containment entry. The above times were estimates used by the inspector from discussions with plant personnel and review of strip charts; documentation of the above events were minimal in the Shift Supervisors Log and not entered in the Control Room Operators Log. The licensee stated that the logging of significant events will be discussed again with the operating staff. Subsequent reviews determined that the steam flow instrumentation was calibrated and left operable per Periodic Test (PT) 2.9.A on March 18, 1980. The instrument valves were apparently closed after the unsuccessful Type A containment integrated leak rate test in April 1980; various flow paths were isolated to identify containment leakage paths. Due to the generic possibility of additional instrumentation isolations on normally quiescent system (e.g., SI flow, auxiliary feedwater flow, etc.) the licensee verified instrument operability on a variety of these systems. Reviews also determined that the electrical fuses were pulled on August 9, 1980 (approx.) in preparation for performing the monthly steam flow instrument calibration (PT 2.9); however, the procedure nor proper tagging were used to identify these actions.

As a result of the above, the following items of noncompliance were identified.

- (1) Contrary to Technical Specification 3.7.2, the high steam line flow instrumentation for actuation of SI was not operable during Unit 2 reactor operation. (Infraction 281/80-37-02).

- (2) Contrary to TS 6.4.D and Section 14 of the VEPCO NPS QA Manual, appropriate tagging was not performed nor were appropriate procedures (PT 2.9 and 2.9A) followed as required when electrical fuses were removed and the transmitters isolated on the six main steam line flow instruments. (Infraction 281/80-37-03).
 - (3) Contrary to 10 CFR 50.72(a)(6), the safety related flow instrumentation isolation, when discovered, was not promptly reported to the NRC (within one hour). (Deficiency 281/80-37-04)
- e. Review of Unit 2 Safety Injections. At 5:36 p.m. on August 22, 1980, Unit 2 was tripped from 75% by initiation of Safety Injection (SI) from high differential pressure between a main steam line and the steam line header. The SI system performed as required. The delta P signal was in for only a fraction of a second before it cleared, and appears to have been caused by a momentary pressure drop and spike in the feedwater pump suction pressure due to the introduction of air or gas into the condensate system from the new condensate-polishing equipment. At the time of occurrence, strong vibrations were noted in areas near the main feedwater lines. A similar SI occurred at 10:05 p.m. on August 26, 1980, while Unit 2 was at 75% power. The delta P signal was so short in duration (approx. 20 msec) that all trains of SI relays were not able to seal in and remain energized. The reactor tripped and the SI train B components initiated, however, certain train A equipment (eg. - LHSI pump A) did not initiate or start. Vibrations were again noted on the feedwater lines, and some slight damage such as piping insulation falling off and cracking in the grout under the pipe supports was observed on the feedwater lines in the service building machinery space. The damage is being repaired. The licensee also examined the feedwater lines, removed certain automatic actions from condensate bypass valve AOV-222, increased the SI delta P setpoint to 120 psid (TS<150 psid), recalibrated the feedwater control system, performed testing on the condensate polishing system, and has implemented a program for reviewing and evaluating the cause and effect of the vibrations. Unit 2 is currently at 50% power until the review is completed.

Following the train B SI on August 26, 1980, the inspector noted that the Boron Injection Tank (BIT) contents were not injected into the reactor coolant system. The operators had terminated the tank injection after the SI signal cleared and a determination was made which verified that an inadvertent SI had occurred; all systems indicated normal during event recurrence at 75% power. The licensee issued instructions to the licensed operators to assure that safety systems will not be over ridden unless continued operation will result in unsafe plant conditions. Retraining will also be conducted on the operation of safety systems during inadvertent safeguards actuations.

- f. Review and tours of the condensate-polishing (C-P) control room and piping. Stone and Webster and VEPCO engineers are reviewing the C-P systems to determine if air or gas is being entrained in the condensate

feed to the feedwater system. While inspecting instruments and alarms in the C-P control room, the inspector noted that operating and annunciator alarm response procedures were not available for the C-P systems. The licensee had required the stationing of a knowledgeable engineer at the site 24 hours a day to respond to alarms or problems that occur in the C-P systems. The licensee also committed to have the operating procedures completed and reviewed by September 15, 1980. (Item 281/80-37-06)

7. Review of Reportable Occurrences

The inspector reviewed the Reportable Occurrence (RO) reports listed below to ascertain that NRC reporting requirements were being met and to determine the appropriateness of corrective action taken and planned. Certain Licensee Event Reports (LER) 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 items of noncompliance were identified.

- a. LER 281/80-01 concerned a deficiency in Periodic Test 28.9 that caused deviations from the allowable delta flux bandwidth. A change was issued on May 14, 1980 to PT 28.9 to correctly calibrate control board delta flux meters.

This LER is closed.

- b. LER 281/80-02 concerned eight 1/4 inch holes drilled through the containment liner to install a RTD. The holes have been repaired and satisfactorily leak tested.

This LER is closed.

- c. LER 281/80-03 concerned the failure to MOV-CW-200B to close electrically due to mechanical repair in progress on the limitorque operator. The valve operated properly following completion of repair. The licensee agreed to re-examine the CAUSE CODE AND CAUSE SUBCODE (items 12 and 13 on the LER Form) to determine if a supplemental LER is required.

This LER is closed.

- d. LER 281/80-04 concerned the inoperability of the Overpressure Mitigating System due to an improper valve lineup during shutdown.

This LER is closed.

- e. LER 281/80-05 concerned leakage through Recirculation Spray Heat Exchanger diaphragm plate seal weld cracks. The defects were repaired and the heat exchangers were fitted with gaskets between the diaphragm plate and heat exchanger cover. The heat exchanger were pressure tested by MOP 7.13.

This LER is closed.

- f. LER 281/80-06 concerned pressurizer level exceeding 33% without over-pressure mitigation protection during depressurization after TYPE "A" containment testing. The licensee is reviewing possible actions to prevent recurrence of this incident. This item remains open.
- g. LER 281/80-07 concerned loss of power to Unit 2 smoke detectors due to a power supply breaker being open. Affected areas were walked down and the breaker shut.

This LER is closed.

- h. LER 281/80-08 concerned a high alarm stepoint on the Air Ejector Radiation monitor caused by instrument drift. The monitor was recalibrated.

This LER is closed.

- i. LER 281/80-09 concerned a Westinghouse reanalysis of fuel clad burst model analysis. The LER form item 13 cause subcode was discussed with the licensee. The LER will be reviewed to determine if a supplemental LER is needed.

The LER remains open.

8. Plant Physical Protection

The inspector verified the following by observation:

- 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.