



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

Report Nos. 50-280/80-20 and 50-281/80-21

Licensee: Virginia Electric and Power Company  
 Richmond, VA 23261

Facility: 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: *[Signature]*  
 D. J. Burke

7/15/80  
 Date Signed

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

7/15/80  
 Date Signed

SUMMARY

Inspection on May 5-June 6, 1980

Areas Inspected.

This routine inspection by the resident inspector involved 110 inspector hours on site in the areas of plant operations and operating records, plant modifications, maintenance and testing, and plant security.

Results

Of the four areas inspected, no apparent items of noncompliance or deviations were found in one area; three apparent item of noncompliance were found in three areas (infraction - failure to follow operating procedure to maintain recirc sump screens - paragraph 5.b, infraction - inadequate implementation of design change control measures for spray systems modifications - paragraph 5.c, infraction - RHR Periodic Test 30.2 not completed prior to Unit 2 refueling - paragraph 6.b).

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## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. L. Wilson, Station Manager
- \*G. Kane, Superintendent, Operations
- \*T. A. Peebles, Superintendent, Technical Services
- \*R. F. Saunders, Superintendent, Maintenance
- R. M. Smith, Supervisor, Health Physics
- \*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, and contractor personnel.

\*Attended exit interview

### 2. Management Interviews

The scope and findings were summarized on a biweekly basis with those persons indicated in Paragraph 1 above. The items of noncompliance were specifically discussed and licensee actions are in progress to resolve the discrepancies.

### 3. Licensee Action on Previous Findings

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Unit 1 Operations

Unit 1 restarted on May 11, 1980, following completion of piping support modifications and LP turbine repairs which began on February 19, 1980. During plant operation, the inspector routinely toured the Unit 1 control room and other plant areas to verify that the operations and maintenance were being conducted in accordance with the Technical Specifications (TS) and facility procedures, Specific areas of inspection and review included the following:

- a. At approximately one minute after midnight on June 3, 1980, the reactor control room personnel began to receive intermittent alarms on the Unit 1 Vital Bus IV. At the time, a security guard was making his rounds in the emergency switchgear room below the control room, and reported that smoke was coming from the 10KVA sola transformer, which feeds Vital Bus IV. The fire alarm was activated and the fire team responded and extinguished the small fire (primarily smoke) in less than five minutes. The

transformer internal fire (wire insulation) was the result of an 8uf electrolytic capacitor rupture failure. The licensee is reviewing the shelf and operating life of the capacitors. When Vital Bus IV was lost, several channel IV alarms were received in the control room and an automatic turbine runback initiated. The reactor tripped one minute later on SG low level coincident with steam flow/feedwater flow mismatch. Safety Injection (SI) was automatically initiated 30 seconds after the trip when the RCS average temperature (Tave) fell below the setpoint of 543 degrees F. because of auxiliary feedwater flow and the substantial station auxiliary steam loads on Unit 1 (Unit 2 and the auxiliary boilers were shutdown). Following initiation of SI, station personnel implemented the appropriate Emergency Procedures and verified that the Engineered Safeguards equipment functioned as required; the core was adequately subcooled at all times. Subsequently, a second SI was initiated when Vital Bus II was connected to Vital Bus IV to re-energize IV; both busses were momentarily lost because the inverter to VB II was disconnected during transfer. The licensee has issued Abnormal Procedures for the loss of Vital Busses. At the time of the event, the procedures were in the final review stage, but not issued. The SOLA transformer was replaced, and Unit 1 restarted at 2:20 p.m. on June 3, 1980. Based on the RWST level change, the pressurizer levels, and the RCS temperatures and boron concentrations, 4,000 gallons of borated water was injected during the SI. The above events were promptly reported to the NRC, who reviewed the data and corrective actions prior to Unit 1 startup.

- b. The inspector accompanied licensee personnel entering Unit 1 containment during operation on May 19, 1980, to perform the weekly hydraulic reservoir inspection and general area tour. The large B-P snubbers on the reactor coolant pumps have not had significant leakage increases and the reservoirs were left full. The inspector toured containment and observed some mops, rags, plastic bags, a cardboard box and assorted trash adjacent to the recirculation sump screens of Unit 1, indicating that Operating Procedure (OP) -1B startup checklist inspections to insure that the recirc sump screens were clear of debris, was not adequately performed. This failure to follow procedure OP-1B is in noncompliance with Technical Specification 6.4.D and constitutes an infraction (280/80-20-01). The licensee took prompt action to remove the observed items from containment.
- c. On May 29, 1980, the licensee notified the inspector that certain accident reanalyses completed the previous day, resulted in a reduction in the operating envelope for containment pressure and temperature, and that Unit 1 may have operated above the revised limits for several days after startup on May 11, 1980. The fact that the Design Change 80-S19 to the containment and recirculation spray systems, which was completed prior to Unit 1 startup, did not provide assurance and verification of design adequacy by the performance of design reviews or appropriate analyses prior to operation is contrary to the design control measures of Criterion III of Appendix B to 10 CFR 50 and

Section III of the VEPCO NPS QA Manual, and is an infraction (280/80-20-02). The inspector verified that Unit 1 containment pressures and temperatures were within the Limiting Conditions for Operation after May 28, 1980.

- d. On May 20, 1980, at 1425, the licensee confirmed that the boric acid storage tank recirculating the BIT, was above the 13% maximum boric acid solution concentration of TS 3.2.B.3 and began a normal rampdown of Unit 1 until the concentration was verified to be within limits at 1514. The inspector noted that previous samples on May 15, and 16, 1980, were 12.7% and 12.9% prior to the 13.1% results of May 20, 1970, which exceeded the LCO. 1-PT-38.3 requires Shift Supervisor notification when the BIT or BAST are not within the 11.8% to 12.7% control band. The licensee stated that more attention will be given to trend analysis of chemistry control, and reemphasized to operations personnel the importance of sampling tanks prior to adding solutions to them. LER 280/80-30 is closed.
  - e. While reviewing the Unit 2 containment leak rate data and the recirculation spray (RS) heat exchanger (HEX) diaphragm rupture deviation report 80-8 of March 6, 1980, the inspector noted that a potential generic issue concerning the ability of the RS HEX diaphragms to withstand the containment Type A test or accident pressures. The inspector expressed further concern after reviewing the Stone and Webster analysis of May 9, 1980, which calculated that the diaphragm seal welds may be overstressed if the containment is pressurized to 47 psi. The licensee had not reported the above data due to conversations with Stone and Webster and subsequent calculations which indicated that the 1/4 inch Monel diaphragms on the ends of the RS HEX's and their welds would not fail.  
  
The NRC is reviewing the calculations. At the request of the inspector, the licensee opened 2-RS-E-1A HEX in Unit 2 to inspect the diaphragms and welds, since the HEX had been exposed to the previous Type A containment test pressure of 46.5 psig. The diaphragms and welds were found intact and undamaged. Nevertheless, the licensee plans to install a gasket between each diaphragm and end cover plate so the diaphragms are not exposed to containment pressures. This item remains open pending NRC review of the above calculations and the installation of the HEX gaskets. (280/80-20-03).
  - f. Prior to Unit 1 startup, the licensee reviewed and increased the steam line to header differential pressure setpoint from 100 to 120 psid to prevent inadvertent SI's. (Setpoint Change Request 80-4). The TS 3.7 limit is  $\leq$  150 psi. (See IE Inspection Report 50-280/80-01, para. 5.a.)
6. Unit 2 Maintenance and Testing. Unit 2 was refueled on April 19 to 23, 1980, and remains in the cold shutdown condition. The inspector reviewed certain completed Periodic Tests (PT) and Special Tests, and observed the conduct of certain tests and plant evolutions to verify that the operations

were conducted in accordance with the plant technical specifications (TS), licensee commitments, and facility procedures. Specific areas of inspection and review included the following:

- a. The Unit 2 containment Type A integrated leak rate test (ILRT) was completed on May 26, 1980. The test data is currently being reviewed by the NRC. The initial test results appear to be within the required acceptance criteria. The licensee will retest the service water isolation valves to the recirculation spray heat exchangers (inside containment) since the valves could not be made leaktight prior to the conduct of the ILRT and were blank-flanged during the test. Prior to the conduct of the ILRT, the inspector toured Unit 2 containment to verify that air bottles and sources of air were removed, that the equipment hatch and airlock doors were properly installed and operable, and that certain valve alignments were correct. Certain welds to the containment liner and grinding indications were also inspected and found acceptable. Within the areas inspected no items of noncompliance were identified.
- b. The inspector continued his review of Periodic Tests performed on Unit 2, and noted that PT 30.2, Residual Heat Removal (RHR) Motor-Operated Valve (MOV) Cycling, was apparently not adequately documented to verify that one train of the RHR system was operable prior to fuel loading on April 19, 1980. This contrary to the intent of TS 3.10.A.6 and is a deficiency (281/80-21-01). One of the two RHR pumps was tested; however, only one of the four RHR valves in PT 30.2 was tested and documented (MOV 2720B), and that test was not performed prior to fuel loading. The licensee recalled testing all four valves.

#### 7. General Items

- a. The inspector verified that the licensee had received the NRC generic letter regarding containment purging during normal operation, and has the necessary controls to prevent the improper manual defeat of safety actuation signals. Since the containment pressure is subatmospheric during normal operation at Surry, containment purging or venting during operation would introduce large amounts of outside air into containment and require a reactor shutdown. The licensee committed to perform containment venting or purging operations only when the plant is in the cold shutdown or refueling mode until valve operability is qualified. NRR reviewed the above and stated, in their April 2, 1980 letter, that the licensee's commitment met the interim position as stated in the NRC letter of October 22, 1979.
- b. On May 5, 1980, two personnel were injured when the Unit 1 outer personnel access airlock door was opened to "break" containment integrity during cold shutdown conditions. A slight differential pressure between containment and the auxiliary building (outside containment) forced the door to blow open and hit two men who were going to open the airlock door to enter containment. The two suffered bruises and were treated at and released from a local hospital. No contamination was involved. Subsequently, on May 16, 1980, during cold shutdown,

some painters were injured in Unit 2 containment when they attempted to move the inner containment airlock door. The door separated from its threaded attachment bolt and fell on two of the men. The resultant broken arm and bruises were treated at the local hospital. Following the above accidents, the licensee stated that the appropriate general announcements will be made prior to unlatching airlock doors to open the containment and that periodic preventive maintenance will be performed on the airlock doors and their controls to assure proper door operation and integrity. Air leakage tests are performed on the doors within 72 hours of each use when containment integrity is required.

- c. As discussed in previous Inspection Reports, the Unit 1 LP turbines were inspected and the blades repaired prior to startup on May 11, 1980. No significant cracks or indications were found in the disc or keyway areas. Unit 2 turbine rotors were previously inspected and a crack was found on disc 2 on the generator end. The disc was replaced prior to reinstallation of the rotor.
- d. The inspector observed the inspection of Emergency Diesel Generator #2 piston to cylinder head clearance measurements on May 9, 1980; the clearances were within the limits of .020 to .068 inches.
- e. During routine area tours, the inspector verified that proper house-keeping and fire protection controls were implemented in critical areas such as the control room, emergency switchgear and relay rooms, auxiliary building, and the turbine building basement. The inspector had no further questions at this time.

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.