



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

Report Nos: 50-280/83-06 and 50-281/83-06

Licensee: Virginia Electric and Power Company
Richmond, VA 23261

Docket Nos: 50-280 and 50-281

License Nos: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection at Surry site near Williamsburg, Virginia

Inspectors: E. H. Girard 3/23/83
E. H. Girard Date Signed

W. J. Ross 3/23/83
W. J. Ross Date Signed

Approved by: B. R. Crowley 3/25/83
J. J. Blake, Section Chief Date Signed
Engineering Programs Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection on February 22-25, 1983

Areas Inspected

This routine, unannounced inspection involved sixty inspector-hours on site in the areas of inservice testing of pumps and valves, secondary coolant chemistry program, inservice inspection and licensee event reports.

Results

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

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. L. Wilson, Station Manager
- *R. F. Saunders, Assistant Station Manager
- *D. A. Christian, Superintendent of Technical Services
- *F. L. Rentz, QA Supervisor
- *H. L. Miller, Director of Operations and Maintenance - Corporate
- *D. Smith, VEPCO Coordinator of Metallurgical Inspection
- *T. Travis, Corporate NDE
 - L. Curfman, Supervisor of Performance and Testing
 - R. Blount, Shift Technical Supervisor, Performance 2 Testing
 - W. Niedemeyer, Shift Supervisor
 - W. E. Patterson, Operator - Leak Testing
 - C. Mehalic, Chemical Technician

NRC Resident Inspectors

- *D. J. Burke, Senior Resident Inspector
- *M. J. Davis, Resident Inspector

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 25, 1983, with those persons indicated in Paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the findings with no dissenting comments.

Unresolved Item 280, 281/83-06-01, Verification of check valve exercising to open position, Paragraph 5.a.

Unresolved Item 280, 281/83-06-02, Basis for MOV stroke time, Paragraph 5.a.

Unresolved Item 280, 281/83-06-03, Specification of containment isolation valve leakage rates, Paragraph 5.a.

Unresolved Item 280, 281/83-06-04, Qualification of pump and valve testing personnel to VT-4, Paragraph 5.a.

Unresolved Item 280/83-06-05, Visual examination procedure for pump and valve internal surfaces, Paragraph 7.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in Paragraphs 5.a and 7.

5. Inservice Testing of Pumps and Valves (92706) Units 1 and 2

The inspectors examined selected aspects of the licensee's implementation of inservice testing (IST) requirements for pumps and valves to verify compliance with regulatory requirements and licensee commitments. The applicable Code for IST, as identified through 10 CFR 50.55a(g), is ASME Section XI (74S75) for Unit 2. For Unit 1, also based on 10 CFR 50.55a(g), the applicable Code revision was ASME Section XI (74S75) until 12/22/82, when it changed to ASME Section XI (80W80). The details of the inspector's examination are described below:

a. Review of Procedures

The inspectors reviewed licensee procedures to verify compliance with requirements and commitments relative to:

- (1) Assignment of responsibilities for preparation of IST procedures and evaluation of IST results
- (2) Scheduling of maintenance
- (3) Calibration and control of test instrumentation
- (4) Performance of the following pump and valve tests and review of the results:
 - Leakage test on Unit 2 primary coolant system isolation valve 2-SI-79 (as required by Technical Specification 3.1.C.7a)
 - Unit 1 valve position indicator checks on valves such as MOV-2687A and B
 - Cold shutdown stroke timing of Unit 1 motor operated valves 1867C and 1867D
 - Determination of discharge pressure on Unit 1 pump 1-RS-P-2B

- Exercising valve 2-SI-79
 - Leakage tests on low head safety injection containment isolation valves (suction from containment sump)
- (5) Specification of allowable leak rates for containment isolation valves
 - (6) Training and qualification of personnel
 - (7) Records maintenance

Procedures reviewed by the inspectors relative to the above were as follows:

- (1) Administrative Procedure ADM-1, Station Organization and Responsibility
- (2) Administrative Procedure ADM-12, Qualification and Training
- (3) Administrative Procedure ADM-60, Station Procedures
- (4) Administrative Procedure ADM-71, ASME Code Section XI Repair/Replacement Program
- (5) Administrative Procedure ADM-89, Test Control
- (6) Administrative Procedure ADM-43, Records Management
- (7) Administrative Procedure ADM-79.2, Maintenance Reports
- (8) Administrative Procedure ADM-86, Operation of Maintenance Department
- (9) Periodic Test Procedure PT 17.3 Containment Outside Recirculation Spray Pumps (Unit 1)
- (10) Periodic Test Procedure PT 16.4, Containment Isolation Valve Leakage (Units 1 and 2)
- (11) Periodic Test Procedure 2-PT-18.3A, Refueling Testing of High Head Safety Injection Check Valves to the Cold Legs (Unit 2)
- (12) Periodic Test Procedure 18.6C, CSD Testing of Charging and SI MOV's and Check Valves (Unit 1)
- (13) Periodic Test Procedure 18.10, Verification of Local and Remote Valve Position Indications of Safety Related Valves (Unit 1)

(14) Periodic Test Procedure PT 18.11, Check Valve Leakage - Primary Coolant System Isolation Valves (Unit 2)

In reviewing the licensee's IST procedures for valves and discussing their implementation with the licensee, the inspectors found that the procedures appeared deficient, in that they did not include appropriate acceptance criteria to assure satisfactory accomplishment of the tests, analyses and corrective actions required by the applicable Code for verification of valve operational readiness. The deficiencies identified were as follows:

- (1) The Code for inservice testing, ASME Section XI, addresses and specifies requirements for inservice testing to verify the operational readiness of valves which are required to perform a specific function in shutting down a reactor to cold shutdown condition or in mitigating the consequences of an accident. Where such shutdown or accident mitigating functions are performed by a check valve, the Code requires that the valve be exercised to the position required to fulfill its function. Unit 1 and 2 Safety Injection System check valves SI-79, SI-82 and SI-85, which are normally closed during operation; open on a reversal of pressure differential to aid in plant shutdown in the event of an accident. The licensee's exercising test for these valves, as described in their procedure PT-18.3A, verifies only that flow is obtained through each of the subject valves on a reversal of differential pressure. The procedure appears to be deficient, in that it does not assure that each of the valves is exercised to the position to fulfill its function. The licensee indicated that they believed that their procedure was adequate in that the valves were "tested by proving that the disk moves promptly away from the seat when closing pressure differential is removed and flow through the valve is initiated", as stated in the Code. The inspectors informed the licensee that they would obtain and provide to the licensee a formal position on this testing. Disposition of the matter will be based on the interpretation obtained and Region II's further review of the licensee's related actions, as evaluated in future inspections. This is identified as Unresolved Item 280, 281/83-06-01, Verification of Check Valve Exercising to Open Position.
- (2) In the case of the motor operated valves which it addresses with testing requirements, ASME Section XI specifies that the valves be stroke timed. In questioning by the inspectors, the licensee stated that the stroke times specified as acceptance criteria in some of their procedures do not have a design basis and that it is not known whether adequate system function would be assured by the specified times. Further, the inspectors found that while Section 6.2 of the FSAR specified maximum stroke times of 10 seconds for 8

inch and under valves required to function on a safety injection signal, the maximum stroke time specified for two such valves (MOV-1867C and 1867D) in test procedure PT-18.6C, was 15 seconds. The licensee's procedures are deficient in that the stroke times which they specify may not assure that the values meet design bases.

The licensee indicated that they had already contacted their Engineer to obtain stroke time limitations on all valves covered by ASME Section XI. They could not state when the times would be supplied or the procedures corrected.

The licensee's identification of this problem, their corrective actions, and the significance of the improperly based stroke time criteria will be reviewed by Region II in subsequent inspections. Until Region II determines the disposition of this through the subject review, it will be identified as Unresolved Item 280, 281/83-06-02, Basis for MOV Stroke Times.

- (3) In the case of valves for which seat leakage must be limited to a maximum in order for them to fulfill their functions, ASME Section XI specifies requirements for seat leakage tests, specification of maximum permissible leakage rates, analysis of leakage rates and corrective actions for valves with leakage rates exceeding those specified or trending to significantly increased rates. For containment isolation valves the NRC accepts the local leak rate tests (Type C) of 10 CFR 50 Appendix J as meeting the intent of the Code requirement for testing. The licensee fulfills the testing requirement on containment isolation valves through their procedure PT-16.4. However, the procedure appears inadequate in that the licensee does not specify maximum leakage rates for the individual valves and does not provide for the specific analysis of leakage rates and corrective action required by the Code (IWV-3520(f) and (g) of ASME Section XI).

The licensee stated that, based on past communications with the NRC, and as indicated in their IST program that was submitted to the NRC for review, they understood that only the Appendix J testing was required on containment isolation valves, that Code required specification of individual maximum leakage rates, analysis of leakage rates, and corrective action were not necessary. The inspectors informed the licensee that they would obtain and provide to the licensee a formal position on this testing. Disposition of the matter will be based on the interpretation obtained and on Region II's further review of the licensee's related actions, as evaluated in future inspections. This is identified as Unresolved Item 280, 281/83-06-03, Specification of Containment Isolation Valve Leakage Rates.

- (4) In discussions regarding the licensee's training and qualification of personnel for performance of inservice testing, the inspectors asked whether licensee personnel performing inservice tests were qualified to perform the tests in accordance with IWA-2214 and 2300 of the 80W80 revision of ASME Section XI, which is applicable to Unit 1. The licensee informed the inspectors that they did not consider the stated requirements applicable to inservice testing personnel and indicated that the cognizant Code subcommittee had made an interpretation to that affect. A copy of the interpretation, described in a letter dated November 8, 1982, from Baron (ASME Secretary) to Ham (Pacific Gas and Electric Co.) was provided to the inspectors. The inspectors informed the licensee that they would determine the NRC's position on the matter of this interpretation before accepting it. The licensee was informed that the matter would be identified Unresolved Item 280/83-06-04, Qualification of Pump and Valve Testing Personnel to VT-4.

b. Record Review and Interviews of Personnel

The inspectors examined the adequacy of the licensee's implementation of selected IST related requirements through reviews of records and interviews of responsible plant personnel as described below:

- (1) Proper development and use of a schedule and summary status list for inservice tests was verified through review of the licensee's "Summary Status of Results" and "Master List of Periodic Tests" and through interviews with Performance and Test personnel.
- (2) Proper performance of tests (6 pump tests) on RHR pumps during the 1982 Unit 2 refueling outage was verified from a review of records related to performance test PT 30.1.
- (3) Proper performance and evaluation of differential pressure measurements on containment outside recirculation spray pump 1-RS-P-2B was verified by monitoring the completion of the test from the control room, reviewing the data entries and discussing the testing with the cognizant operator and shift supervisor.
- (4) Proper performance of the four tests performed on Unit 2 safety injection MOVs and HCVs in accordance with precodure PT 18.6A during the 1982 refueling outage was verified from a review of the test records.
- (5) Proper understanding of methods for obtaining pump vibration measurements was verified by interview of a responsible reactor operator.

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

6. Secondary Coolant Chemistry Program (92706) - Units 1 and 2

The inspectors examined the licensee's chemistry program for the secondary coolant system in relation to inhibiting and minimizing degradation of the feedwater train, steam generator, and turbine. The details of this examination are summarized as follows:

a. Interviews of Personnel

The inspectors reviewed the scope of chemical concerns and surveillance activities with responsible management and technical personnel. These discussions pertained primarily to evidence of inleakage, the presence of corrosion products, and the chemical consequences of the fuel "leakers" during the last fuel cycle of Unit 1.

b. Periodic Test Procedure

The inspectors evaluated the adequacy of the licensee's secondary water chemistry program by reviewing the following Periodic Test Procedures.

PT-38.41 Main Steam Coolant
 PT-38.42 Steam Generator Secondary Coolant
 PT-38.45 Condensate Dissolved Oxygen
 PT-38.5 Secondary Coolant Beta-Gamma and Tritium Activity

c. Chemistry Log

The inspectors verified that the actions described in procedure PT-38.42 related to chemical surveillance, were being taken through selective review of the Chemistry Logs for Surry Unit No. 2.

7. Inservice Inspection - Review of Procedures (73052) - Unit 1

The inspectors reviewed the licensee's procedures for inservice inspection visual examination of pump and valve internal surfaces to verify their compliance with regulatory requirements - including the applicable code requirements. The applicable Code is ASME Section XI (74S75). The procedures applicable to the visual examinations were identified by the inspectors from the program for the current Unit 1 outage, the Westinghouse "Inservice Inspection Program of the Surry Unit No. 1 Nuclear Power Plant" for the third outage of the third period of the first interval. These procedures were:

- Visual Examination Procedure, ISI-8, R7, A1
- Preservice and Inservice Documentation, OPS-NSD-101, R5, A03

The examinations to be performed with the procedures had not begun when the inspectors performed their review. The procedures were reviewed for proper approval, specification of qualification requirements, technical content and reporting requirements.

The inspectors questioned the adequacy of the procedures, in that they did not state what was being looked for, what findings were required to be evaluated, what data was to be reported, or how the data was to be reported. The licensee stated that they would have the contractor revise the procedures and that they would assure that they would contain adequate criteria to obtain satisfactory examinations in accordance with the applicable requirements. The inspectors informed the licensee that Region II would review the procedural revision and the adequacy of the examination in subsequent inspection. The matter was identified Unresolved Item 280/83-06-05, Visual Inspection Procedure for Pump and Valve Internal Surface Examinations.

Within the areas examined, no violations or deviations were observed.

8. Reportable Occurrence - Licensee Event Report - Units 1 and 2

(Open) Licensee Event Report (280/83-03): Failure of Recirculation Spray Service Water MOVs. This event was initially reported to Region II on February 10, 1983. A report followed, dated February 23, 1983. This item involved the licensee's finding, during performance of Unit 1 Recirculation Spray Heat Exchanger flushes, that certain motor operated valves (MOVs) would not open on demand from the control room. Subsequently, it was found that similarly located Unit 2 MOVs would not open. The valves were found capable of being opened manually. The Unit 1 valves were disassembled and examined by the licensee. The licensee reported that several of the valves were found bound up due to corrosion, and in one instance a valve failed to operate because of corrosion of its torque switch. The cause of failures in four other valves could not be definitely identified but was tentatively attributed to undersized motors and possible seat creep. The inspectors reviewed the licensee's report on this event, examined the affected valves and discussed the matter with the NRC Senior Resident Inspector. The NRC Senior Resident Inspector is following the licensee's actions related to these valves and will determine when the item may be closed.