



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

Report Nos.: 50-338/78-27 and 50-339/78-26

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and CPPR-78

Licensee: Virginia Electric and Power Company
P. O. Box 26666
Richmond, Virginia 23261

Facility Name: North Anna Power Station, Units 1 and 2

Inspection at: North Anna Power Station, Mineral, Virginia

Inspection conducted: July 31 - September 1, 1978

Inspector: M. S. Kidd
Resident Reactor Inspector

Approved by: R. C. Lewis for
R. C. Lewis, Chief
Reactor Projects Section No. 2
Reactor Operations and Nuclear
Support Branch

10/16/78
Date

Inspection Summary

Inspection on July 31 - September 1, 1978 (Report Nos. 50-338/78-27 and 50-339/78-26)

Unit 1 Areas Inspected: Routine inspection by the resident inspector of previously identified items of noncompliance, unresolved, and open items, IE Bulletins and Circulars; Licensee Event Reports; plant tours; reactor coolant system activity; and personnel and organizational changes. The inspections involved 51 man-hours by the NRC resident inspector.

Unit 2 Areas Inspected: Routine inspection by the resident inspector of previously identified open items, IE Bulletins and Circulars, plant tours, controls for preoperational testing, personnel changes, and the schedule for fuel loading. The inspections involved 40 man-hours by the NRC resident inspector.

Results: No items of noncompliance were identified with respect to Unit 2. With respect to Unit 1, one item of noncompliance was identified (Deficiency) involving failure to submit a thirty-day report to NRC as required by Technical Specification 6.9.1.9 - paragraph 10.

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DETAILS I

Prepared by:

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10/16/78
Date

Dates of Inspection: July 31 - September 1, 1978

Reviewed by:

R. C. Lewis
R. C. Lewis, Chief
Reactor Projects Section No. 2
Reactor Operations and Nuclear
Support Branch

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1. Persons Contacted

Virginia Electric and Power Company (VEPCO)

J. A. Ahladas, Station Manager - 3/4/
K. E. Baker, Supervisor, Engineering Services - 1/2/
W. R. Cartwright, Superintendent, Station Operations
(Unit 1) - 1/2/3/4/5
W. Diehl, QC Engineer, Operations - 1/2/4/
L. O. Goodnieb, Supervisor, Mechanical Maintenance
E. S. Grecheck, Licensing Engineer
J. V. Harrison, Construction Project Manager
M. Harrison, QC Engineer, Construction
J. R. Harper, Instrument Supervisor - 1/2/3/4/
J. H. Horton, Chemistry Supervisor - 1/2/
J. D. Kellams, Operating Supervisor - 1/2/3/4/
S. M. Kim, Power Station Engineering
R. P. Kinsey, Supervisor, Electrical Maintenance
D. G. McLain, Engineer - 4/
C. E. Necessary, Superintendent Station Operations (Unit 2) - 5
R. E. Sidle, Mechanical Maintenance Coordinator
P. A. Slatter, Resident QC Engineer, Construction
D. L. Smith, Resident QC Engineer, Operations - 3/
E. R. Smith, Jr., Acting Supervisor, Engineering Services - 1/2/3/5
D. L. Snodgrass, Assistant Instrument Supervisor
B. R. Sylvia, Director, Nuclear Operations - 3/
F. T. Terminella, Associate Engineer
D. E. Thomas, Electrical Maintenance Coordinator
D. C. Woods, Senior Engineering Technician - 1/2/3/5

Stone and Webster Engineering Corporation (S&W)

R. J. Daly, Lead Advisory Engineer

- 1/ Denotes those present at management interview August 4, 1978.
- 2/ Denotes those present at management interview August 11, 1978.
- 3/ Denotes those present at management interview August 18, 1978.
- 4/ Denotes those present at management interview August 25, 1978.
- 5 Denotes those present at management interview September 1, 1978.

2. Licensee Action on Previous Inspection Findings

Noncompliance (Unit 1)

(Closed) Infraction (78-14-01): SNSOC Review of Technical Specification Violations. Corrective and preventive measures discussed in the licensee's response to the Notice of Violation, dated June 22, 1978, were verified to be complete through review of documentation and discussions with station personnel.

(Closed) Infraction (78-14-03): Failure to Maintain/Implement A Procedure. Corrective and preventive measures discussed in the licensee's response, dated June 22, 1978, were verified to be complete through review of onsite documentation and discussions with station personnel.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. One unresolved item disclosed during the inspection is discussed in paragraph 9.f of this report.

4. Management Interviews

Management interviews were conducted on August 4, 11, 18, 25, and September 1, 1978, with members of station management and other licensee staff members denoted in paragraph 1. All subjects presented in these Details were discussed. Selected topics covered during each meeting and lead licensee representatives attending them are given below:

- a. August 4, 1978 - W. R. Cartwright
The increase of iodines in the reactor coolant was discussed, with management noting that surveillance had been increased.
- b. August 11, 1978 - W. R. Cartwright
The inspector's attendance at a meeting of the Louisa County Board of Supervisors and other parties on August 7 to discuss

expansion of spent fuel storage capability and questions from a local news reporter regarding airborne radioactive releases were discussed with station management.

- c. August 18, 1978 - B. R. Sylvia
The proposed organization change in VEPCO's Production Operations and Maintenance Department was discussed. The inspector stated that a request to change technical specifications should be submitted to Nuclear Reactor Regulation (NRR) prior to the proposed implementation date of September 1, 1978. A management representative stated that this would be done.
- d. August 25, 1978 - J. A. Ahladas
The proposed organizational change (see item c. above) was discussed again.
- e. September 1, 1978 - W. R. Cartwright
The unresolved item concerning LER 78-23 and the infraction involving LER 78-80 were discussed in detail.

5. Followup on Previously Identified Open Items

- a. Leakage of Containment Isolation Valves With Resilient Seats (Item 78-02-02)

This open item concerned the licensee's findings as a result of evaluations performed per IE Circular 77-11. Further review by the licensee resulted in the decision to utilize their computer controlled preventive maintenance program to schedule periodic inspection of installed seats and to control replacement of installed seats and spares in inventory upon expiration of the vendor recommended shelf life. This item is closed.

- b. Separation of Contaminated and Noncontaminated Water Systems (78-02-03)

As reported in IE Report 50-338/78-02, Details I, paragraph 6.b.(3), licensee personnel were attempting to obtain complete prints of the domestic water system from Stone and Webster (S&W). As of the current inspection, this had not been accomplished, thus this item remains open.

c. Degradation of Fuel Oil Flow to Emergency Diesel Generators
(78-02-04)

This item concerned further studies to be conducted to ensure non-degradation of fuel oil to the diesel generators. During the current inspection, the inspector verified that Procedure MMP-P-EG-1 had been revised (July 31, 1978) to periodically replace the day tank oil strainers. Also, a summary of findings by a station engineer concerning metals in tanks and piping, along with possible temperature change effects was reviewed. Purchase specification for the storage tanks and piping revealed no copper or zinc to be present. Also, the summary concluded that temperature changes would not present a problem for the large tanks used for Units 1 and 2. The inspector had no further questions.

d. Control of Containment Sump Pit Following A LOCA (78-02-01)

The licensee's initial response to IE Bulletin 77-4, dated December 23, 1977, indicated that acceptable pH ranges were expected based on the interim solution to the outside recirculation spray (ORS) pumps net positive suction head problem. A second response, dated May 16, 1978 (Serial No. 261) provided results of calculations based on water inventories existing after the permanent solution, the casing cooling system, was installed (see IE Rpt. No. 50-338/78-17, Details I, paragraph 5). The revised calculations demonstrate a pH range of 7.7 to 8.1 versus original values of 8.0 to 8.3. These compare favorably with the range given in the Bulletin. Following discussions with licensee personnel regarding certain water volumes assumed for the calculations, the inspector had no further questions or comments. This item (78-02-01) is closed.

e. Baseline Data for Component Cooling Heat Exchangers

As noted in IE Rpt. 50-338/77-30, Details I, paragraph 6.b, the baseline performance data for 1-CC-E-1A and 1-CC-E-1B did not appear correct. These data were retaken via PO-11.4A, rerun March 18, 1978. Review of the completed procedure resulted in no further questions by the inspector. This item is closed.

f. Low Diesel Generator Crankcase Vacuum

As noted in IE Rpt. 50-338/77-30, Details III, paragraph 5(1), the diesels shutdown due to low crankcase vacuum during each testing. A review of Preoperational Deficiency Report 303 and its associated Engineering and Design Coordination Report (E&DCR) 6925A-1 revealed that the problem had been corrected and the diesels successfully retested. This item is closed.

g. Neutron Shield Tank Cooling System Retest

As discussed in IE Rpt. 50-338/77-36, Details I, paragraph 5.a, the system would be retested at power when an adequate heat load would be present. PO-12A, Neutron Shield Tank Cooling System Retest, was run July 11, 1978. Results met acceptance criterion of ability to maintain $\leq 140^{\circ}\text{F}$ with a heat load on one cooler of $\leq 80,000$ Btu per hour. The inspector had no further questions on this testing.

h. Piping System Tests

As noted in IE Rpt. 50-338/77-36, Details III, paragraph 5.a, additional piping tests were to be conducted per PO-6 and PO-29A. Completed PO-6 was previously reviewed and findings documented in IE Rpt. 50-338/77-51. During the current inspection, PO-29A, Reactor Coolant and Associated Systems Piping Vibration Retest, was reviewed. There were no questions on the results of this testing conducted December 13, 1977.

i. Training in Use of Procedures (Unit 1)

As discussed in IE Rpt. 50-338/77-51, Details I, paragraph 6.f.(?), training in use of procedures was to be provided for off site personnel who calibrate meteorological tower instrumentation. Discussions with plant personnel during the current inspection and review of training records revealed that training had been provided for six persons in VEPCO's Environmental Services and Communications Groups on November 14, 1977. The inspector had no further questions in this area.

6. IE Circulars - Units 1 and 2

These IECs were discussed to verify that they had been received by station management; a review for applicability had been performed; and where applicable, further action had been taken or planned.

a. IEC 78-02 - Proper Lubricating Oil for Terry Turbines

Station review revealed the oil in use in the auxiliary feedwater turbine to be of the wrong type, thus one of those oils recommended by the vendor and listed in the IEC was ordered. A maintenance report was written to replace the oil when the new oil arrives. All other oils used in Units 1 and 2 and all greases except for two types are purchased from one vendor who keeps the utility informed as to changes in products which it receives. The inspector had no further questions regarding this IEC.

b. IEC 78-06 - Potential Common Mode Flooding of ECCS Equipment Rooms at BWR Facilities

The licensee's review of this subject revealed that Units 1 and 2 were not susceptible to the flooding discussed in the IEC. The inspector had no questions or comments in this area.

c. IEC 78-07 - Damaged Components of a Bergen-Paterson Series 25000 Hydraulic Test Stand

Station review revealed that no hydraulic suppressors on test equipment of the type described in the IEC are used in Units 1 and 2. The inspector had no questions in this area.

7. IE Bulletin 78-06 (Unit 1)

VEPCO's response to this bulletin, "Defective Cutler-Hammer Type M Relays with DC Coils" for Unit 1, dated July 21, 1978, states that no relays of this type are in use or in inventory. This information is supported by the minutes of SNSOC meeting number 78-97 (June 8, 1978). The inspector had no questions on this matter.

This bulletin was responded to in separate correspondence for Unit 2 and was closed in IE Rpt. 50-339/78-23.

8. Reactor Coolant System Activity Increase

On July 25, 1978, reactor coolant system activity (Iodine - Equivalent) started increasing from 1.2×10^{-2} micro curies per gram to a maximum of 1.9×10^{-1} $\mu\text{Ci}/\text{gram}$ on July 29. The increase started after a power increase on July 25. Following the activity rise, surveillance was increased to four times per day (normally once per fourteen days). This was continued through August 19, when a schedule of twice per day was begun.

The increased activity level might be indicative of a small number of fuel pins failing, but is well within the limit (one $\mu\text{Ci}/\text{gram}$) of Technical Specification 3.4.8.b.

9. Licensee Event Report Review (Unit 1)

The following LERs were reviewed to verify that reporting requirements had been met, causes had been identified, corrective actions appeared appropriate, generic applicability had been considered, and the LER forms were complete. Additionally, for those reports identified by asterisks, a more detailed review was performed to verify that the licensee had reviewed the events, corrective actions had been taken,

no unreviewed safety questions were involved, and violations of regulations on license/Technical Specification conditions had been identified.

- a. LER 78-10*, Seismic Analysis Incorrectly Performed on Spray Pump Can (Fourteen-Day) - This LER indicated that the seismic design calculations for the recirculation spray pump cans had been performed incorrectly regarding assumptions that the can was a rigid body. A Unit 2 report per 10 CFR 50.55(e), dated March 3, 1978 (Serial No. 176), states that the assumptions were correct and no further action was needed. A detailed review of this matter was documented in IE Rpt. 50-339/78-14. Since the Unit 1 pumps are of the same design, this matter is considered closed for Unit 1 also.

During the management interview of September 1, 1978, the inspector stated that there were no further questions on this matter, but that station management should assure that someone monitors LER information in order that they be corrected as necessary. This comment was acknowledged.

- b. LER 78-19*, Error in Westinghouse LOCA-ECCS Evaluation Model (Fourteen-Day) - Due to the error found, a reanalysis was submitted to NRR. Following NRR review, revised technical specifications were issued as part of Amendment 3 to Unit 1 Operating License NPF-4 on April 1, 1978.
- c. LER 78-20*, Service Water Pumphouse Settlement - This thirty-day report was submitted due to entry into the Action Statement for Technical Specification 3.7.12.1.a, which requires a special report when settlement of a Class I structure exceeds 75% of the limit given in Table 3.7-5. The special report was submitted to NRC May 31, 1978, Serial No. 306. Additionally, proposed Technical Specification Change No. 12 was submitted June 13, 1978, requesting revision of the settlement limit. These documents demonstrate that a significant portion of the settlement since December 1975 was due to installation of the groundwater control system, based on surveys made by Stone and Webster (S&W) throughout 1977. The inspector noted that the S&W data was not made known to him during a prior review of this subject, but only the results of surveys by Moore, Hardee, and Corrouth Associates (see IE Rpt. No. 50-338/78-11, Details I, paragraph 7).

The proposed specification change and supporting analyses are under review by NRR.

- d. LER 78-21, Two Charging Pumps Out of Service (Thirty-Day).

- e. LER 78-22, Meterological Data Recorders Indicating Zero (Thirty-Day).
- f. LER 78-23*, Unqualified Stem Mounted Limit Switch (Thirty-Day). The inspector reviewed completed E&DCR PS-461D-1 to verify that the seal-in function for the limit switch for TV-SS112A had been relocated outside containment. It was noted that the E&CDR was signed off as complete June 23, 1978, but Drawing ESK-6QK, the elementary diagram for the circuit involved, had not been updated as of August 21, 1978. The North Anna Project Manual (VEPCO), Procedure 2.2, "Engineering and Design Requirements," states on page 2.2-8 that Unit 1 drawings will be updated within thirty days of E&CDR closure. Following discussion on this matter with station personnel, the inspector stated that updating of drawings would be identified as an unresolved item (338/78-27-01) and would be inspected further during subsequent inspections.
- g. LER 78-24, Boric Acid Storage Tank Level Low (Thirty-Day).
- h. LER 78-25*, Trip Valve MS-101C Would Not Open From H Bus Control Board (Thirty-Day). Corrective actions on this problem were reviewed in the form of Maintenance Report N1-004774 and Maintenance Procedure EMP-C-TS-1, both completed on April 13, 1978. There were no questions on these corrective actions.
- i. LER 78-26, Moderator Temperature Coefficient Greater Than Zero (Thirty-Day). The LER states that MTC will be measured again after a core burnup of about 3,000 MWD per MTU. This will be reinspected at a later date (Item 50-338/78-27-02).
- j. LER 78-27*, High Reset Points on Pressurizer Pressure Comparator (Thirty-Day). It was confirmed that the procedures in error, ICP-P-1-P-455, 456, and 457 had been revised (July 3, 1978) to provide correct setpoint values.
- k. LER 78-28, Emergency Condensate Storage Tank Level Low (Thirty-Day).
- l. LER 78-29, Surveillance Test Not Performed Within Required Time Period (Thirty-Day).
- m. LER 78-30, Personnel Air Lock Door Not Sealed Completely (Thirty-Day).
- n. LER 78-32, Steam Flow Transmitter Placed in Trip to Repair Leak (Thirty-Day).
- o. LER 78-36*, Incorrect Auxiliary Feedwater Valve Lineup (Thirty-Day). The inspector confirmed that the procedure referenced had been revised (June 5, 1978) to provide the correct valve lineup.

- p. LER 78-37*, Containment Air Temperature Above Limit (Thirty-Day). The cause as described in the LER for the high containment temperature was clogged nozzles and strainers in the chilled water system steam ejector. Station personnel felt that this was the first occurrence for Unit 1. Feasibility of including surveillance of the nozzles and strainers via the mechanical maintenance preventive maintenance program was to be studied. The inspector had no further questions.
- q. LER 78-38, Containment Air Temperature Above Limit During Station Blackout Test (Thirty-Day).

10. Written Licensee Event Report Not Submitted

On May 15, 1978, the inspector was notified via telephone by a member of station management that the Unit 1 unidentified primary leakage was greater than one (1) gallon per minute (Technical Specification Limit) and that the unit would be shut down via the turbine/generator trip test from full power. As of August 15, 1978, no LER had been received on this event. A report is required within thirty days of the event per Technical Specification 6.9.1.9.b. Followup by station personnel on August 15 revealed that no Deviation Report had been submitted for Station Nuclear Safety and Operating Committee (SNSOC) review as required by paragraph 16.6.1.1 of the Nuclear Power Station Quality Assurance Manual (NPSQAM).

On August 31, 1978, LER 78-80 was submitted to IE:II defining corrective actions concerning the RCS leakage and preventive actions concerning failure to process a Deviation Report and subsequent submittal of an LER. The long term corrective action consisted of reminding all shift supervisors of the requirement to submit a Deviation Report for SNSOC review anytime a Technical Specification Action statement is entered.

During the management interview of September 1, 1978, the inspector stated that failure to submit an LER within thirty days appeared to be in noncompliance (Deficiency) with Technical Specification 6.9.1.9.b. He further stated that there were no further questions on the matter in that corrective and preventive measures had been completed and this did not appear to be a generic problem.

11. Station Personnel Changes

Effective September 1, 1978, the VEPCO Production Operations and Maintenance Department will undergo an organizational change, with J. A. Ahladas, Station Manager, being promoted to the Corporate Offices. Changes at the station will include promotion of W. R. Cartwright

(Superintendent of Station Operations - Unit 1) to Station Manager, and reassignment of C. E. Necessary (Superintendent of Station Operations - Unit 2) to Superintendent of Station Operations - Unit 1. Also, E R. Smith, Jr. will become Engineering Services Supervisor (presently acting) vice K. E. Baker, who will be promoted to the Corporate Office. D. G. McLain will be promoted to Engineering Supervisor in Engineering Services and will assist Smith.

Records of education, work experience, and related training for Cartwright, Necessary, and McLain were reviewed and compared to the requirements of ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel" (1971) and FSAR Section 13.1.3.1 for their respective positions. No discrepancies were noted. A similar review for Smith was documented in IE Rpt. 50-338/78-11, Details I, paragraph 9. Necessary, whose appointment is temporary, will also be promoted to Corporate Offices in the near future.

12. Plant Tours

a. Scope

Periodic tours of most accessible plant areas were conducted during the inspection period, with emphasis on Unit 2 areas. During these tours, conducted August 17, 23, and 30, 1978, the following items were observed:

- (1) Hot Work. Adequacy of fire prevention/protection measures used.
- (2) Fire Equipment. Operability and evidence of periodic inspection of fire suppression equipment.
- (3) Housekeeping. Minimal accumulations of debris and maintenance of required cleanness levels in systems under or following testing.
- (4) Equipment Preservation. Maintenance of special preservative measures for installed equipment as applicable.
- (5) Component Tagging. Implementation and observance of equipment tagging for safety or equipment protection.
- (6) Instrumentation. Adequate protection for installed instrumentation.
- (7) Cable Pulling. Adequate measures taken to protect cable from damage while being pulled.

- (8) Communication. Effectiveness of public address system in all areas of the site.
- (9) Equipment Controls. Effectiveness of jurisdictional controls in precluding unauthorized work on systems turned over for testing.
- (10) Foreign Material Exclusion. Maintenance of controls to assure systems which have been cleaned and flushed are not re-opened to admit foreign material.
- (11) Security. Implementation of security provisions. Particular attention to maintenance of the Unit 1/Unit 2 interface.

b. Findings

Unless specifically noted below, no discrepancies were noted. Specific findings which indicated need for management attention were related to station management as soon as practicable. These included:

- (1) Lack of protection for the Unit 2 Quench spray pumps from overhead welding.
- (2) Isolated instances of poor housekeeping.
- (3) One instance of failure to protect an installed instrument.

Corrective actions were implemented on these items in a timely fashion as evidenced by followup inspections.

13. Unit 2 Scheduling Meeting

On September 1, 1978, the inspector attended a meeting between VEPCO and NRC at the site to discuss the fuel load schedule for Unit 2. VEPCO's lead spokesman was J. V. Harrison, Project Manager, A. W. Dromerick, Project Manager of NRR and S. Kari of the Office of Planning and Analysis represented NRC Headquarters.

VEPCO indicated that December 22, 1978, the current "Yellow Book" date is still a target date, although current scheduling projections indicate March 15, 1978, to be the date if activities occur as scheduled. The NRC representatives concluded that December 22 was extremely optimistic, and that March 15, 1979, was optimistic, but obtainable.

VEPCO noted that the construction permit for Unit 2 expires in November 1978, thus the fuel load schedule will be revised when an extension of the permit expiration date is requested, if not before.

14. Overall Review of Unit 2 Preoperational Test Program

a. Scope of Review

Licensee documents containing guidelines and administrative controls for conduct of the preoperational (pre-fuel loading) test program were reviewed and compared to the applicable provisions of Sections 14 and 17.7 of the FSAR for Units 1 and 2 and to Regulatory Guide (RG) 1.68; "Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors" (RG 1.68)-1973. This inspection was similar to that conducted for Unit 1 and documented in IE Rpt. 50-338/75-13 and 75-15. Licensee documents reviewed include the following:

- (1) Station Administrative Procedure (ADM) 101, "Preoperational and Startup Test Programs," March 17, 1976.
- (2) ADM 102, "Qualifications of Preoperational Testing Personnel," January 9, 1978.
- (3) ADM 103, "Instructions for Deficiency Reports," October 28, 1977.
- (4) ADM 104, "Implementation of Architect-Engineer Construction Design Changes After Receipt of Operating License," February 24, 1978.
- (5) ADM 45, "Housekeeping," September 26, 1977.
- (6) North Anna Specification (NAS) 416, "Procedure for Conducting the Test and Checkout Programs," May 22, 1978.
- (7) NAS 407, "Cleaning of Systems and Components During Construction," April 28, 1978.
- (8) NAS 414, "Hydrostatic Testing Guidelines," November 23, 1977.
- (9) NAS 415, "Equipment and System Tagging," January 30, 1976.
- (10) NAS 382, "Housekeeping Requirements During the Construction Phase," February 15, 1973.
- (11) VEPCO's "Nuclear Power Station Quality Assurance Manual" (NPSQAM), various dates as of August 31, 1973:
 - Section 2 - "QA Program"
 - Section 5 - "Instructions, Procedures and Drawings"

- Section 6 - "Document Control"
 - Section 11 - "Test Control"
 - Section 12 - "Control of Test and Measuring Equipment"
 - Section 14 - "Inspection, Test and Operating Status"
- (12) "Quality Assurance Manual" (Design and Construction):
- Section 7.1, "Control of Purchased Material, Equipment, and Services - Engineering and Construction, "November 11, 1977
 - Section 12.2, "Inspecting and Testing of Instrument and Control Equipment," March 1, 1977
 - Section 14.1, "Preliminary Operation - Administrative Procedures," March 29, 1978
- (13) S&W Field Quality Control (QC) Procedure QC-19.1, "Work Area Cleanliness Control," January 24, 1978
- (14) S&W Project Operating Procedure (POP) 500, "Field Procedure for the Control and Flow of Engineering and Design Coordination Reports," January 18, 1978
- (15) POP-717, "Document Control," March 3, 1978.

b. Findings

The documents in paragraph a. were reviewed to verify that controls existed for various functions within the test program. Findings relative to each function are discussed below:

(1) Test Program

A description of the testing program, including initial testing and formal preop testing exists. Responsibilities for the various types of tests have been defined. Individual tests have been defined, along with an expected sequence. The format of test procedures has also been defined.

Discussions regarding specific tests to be conducted to assure commitments of FSAR Table 14.1-1 are met were continuing at the close of this inspection period.

(2) Test Organization

Responsibilities of the various groups to be involved in testing, their interfaces, and qualifications have been defined.

(3) Test Program Administration

Review of controls in this area revealed that:

- (a) Methods for control of system status before testing and turnover of systems have been defined. Methods for return of systems to construction also exist.
- (b) Controls for conduct of tests, including scheduling, coordination of testing, and documentation of results have been defined.
- (c) Requirements for documenting deficiencies found in testing and resolution of them have been defined. Requirements also exist for documenting interruptions of tests and subsequent reverification of initial test conditions before restarting the test.
- (d) Controls have been established for formal evaluation of test results and resolution of deficiencies found.

(4) Document Control

Administrative controls have been established which control test procedure processes for review, approval and issuance, and for revision of approved procedures. These controls also require use of approved operating procedures where possible in the test program.

Controls for the review, approval, issuance, and revision of engineering drawings and vendor manuals were still under review at the conclusion of the inspection period.

(5) Design Changes and Modifications

Administrative controls for permanent design changes were under review at the conclusion of the inspection period.

Review of controls for temporary modifications, jumpers and bypasses revealed that:

- (a) Written administrative controls have been established for controlling temporary modifications, jumpers, and bypasses.
 - (b) Controls require that a formal log be maintained of the status of jumpers, lifted leads, control equipment, temporary trip points, etc.
 - (c) The controls assign responsibility for maintaining the log.
 - (d) Installed jumpers or lifted leads will be readily identifiable by their physical appearance.
 - (e) Controls are established to account for installation and removal of spool pieces, strainers, blank flanges, and valve internals where testing requires modification to fluid systems.
 - (f) The controls assign responsibility for determining when independent verification is required during the installation or removal of temporary bypasses or fluid system modifications.
 - (g) The controls assign responsibility for determining when functional testing of equipment is required following installation or removal of temporary jumpers, lifted leads, or fluid system modifications.
- (6) Plant Maintenance

Review of administrative controls for corrective plant maintenance following system turnover from construction revealed the following:

- (a) Plant maintenance is required to be performed in accordance with defined administrative controls.
- (b) Methods have been established for initiating, reviewing, approving and scheduling maintenance.
- (c) Methods have been established for controlling replacement materials and parts that are designated for use in safety-related maintenance activities.
- (d) Controls have been established which require that only qualified personnel will perform maintenance activities.

(e) Maintenance administrative controls have been established which include the following:

- Criteria for determining when maintenance procedures will be provided.
- Method for preparing maintenance procedures.
- Requirements for reviewing and approving maintenance procedures.
- Methods of determining when training of personnel in the use of maintenance procedures is required.
- A formal method to assure that appropriate approvals will be obtained prior to performing any maintenance activity.
- Inspection of maintenance work including final inspection of a completed task.
- Testing of structures, systems or components following maintenance to reestablish the validity of preoperational tests.
- Control of test and measurement equipment utilized in maintenance activities.

(f) Controls have been established which require preparation and retention of maintenance records.

Controls for preventive maintenance were under review at the conclusion of the inspection period.

(7) Equipment Protection and Cleanliness

a. Controls for housekeeping activities were verified to include provisions for:

- (1) Implementation of cleanliness zones.
- (2) Control of facilities and equipment including cleanliness, environment, and fire protection/prevention.
- (3) Periodic inspection to assure the adequacy of housekeeping.

- (b) A program for maintaining the appropriate degree of cleanliness of nuclear plant components and piping during preoperational testing has been established.

Water chemistry controls during preoperational testing were still under review at the conclusion of the inspection period.

(8) Test and Measurement Equipment

Review of controls for test and measurement equipment revealed that they include:

- (a) A listing of controlled test equipment, the calibration requirements, and the calibration history.
- (b) Controls for storage and issuance to preclude use of equipment which has not been calibrated within the specified interval.
- (c) Requirements for recording test equipment identity and calibration date in test procedures to permit retest if equipment is subsequently found out of calibration.

(9) Training of Test Personnel

Review of training requirements established for testing personnel revealed that they include these subject areas:

- (a) Test procedure preparation.
- (b) Test procedure approval.
- (c) Test performance and documentation.
- (d) Test results review and approval.
- (e) Other administrative controls for testing.
- (f) QA/QC for testing.
- (g) Technical objectives.

As noted in certain paragraphs above, review of administrative controls for certain functions is continuing and results will be reported in a subsequent inspection report. For those controls which have been completely reviewed to date, no discrepancies or deviations from commitments were noted.