



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

Report Nos.: 50-338/85-11 and 50-339/85-11

Licensee: Virginia Electric and Power Company  
 Richmond, VA 23261

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: April 8 - 12, 1985

Inspectors:	<u>L. E. Foster</u>	<u>5/3/85</u>
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Approved by:	<u>T. E. Conlon for</u>	<u>5-6-85</u>
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SUMMARY

Scope: This routine, announced inspection entailed 135 inspector-hours at the site concerning licensee response to Generic Letter 83-28, Required Actions Based on Generic Implications of Salem Anticipated Transient Without Scram (ATWS) Events. Areas inspected included: post-trip review; equipment classification; vendor interface and manual control; post-maintenance testing; and reactor trip system reliability.

Results: Two violations were identified - Inadequate Review of Procedures for Reactor Trip Maintenance, paragraph 9.a; Failure to Follow Procedure During Performance of Work Order No. 9344, paragraph 10.a.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*E. W. Harrell, Station Manager
- \*M. L. Bowling, Assistant Station Manager
- G. Bridges, Station Records
- R. P. Beger, Electrical Foreman
- R. A. Bergquist, Instrument Maintenance Supervisor
- S. Berman, Senior Buyer
- K. Cummings, Purchasing Supervisor
- E. Creech, Outage Planner
- \*S. B. Eisenhart, Licensing Coordinator
- K. Epperson, Performance Engineer
- A. Gibson, Station Records
- \*J. R. Harper, Supervisor, Maintenance
- \*R. T. Johnson, Supervisor Quality Assurance
- P. Knutsen, Engineering Coordinator
- P. B. Perrine, Senior Computer Technician
- \*J. Rauth, Supervisor, Records Management
- J. Roth, Engineer
- J. A. Stall, Superintendent of Technical Services
- B. Starr, Operations Coordinator
- \*R. Sidle, Supervisor, Maintenance Services
- L. Silman, Staff Engineer
- F. Sowards, Mechanical Supervisor
- B. Sturgill, Supervisor, Safety Engineering
- \*F. T. Terminella, Supervisor, Quality Control
- R. S. Thomas, Shift Technical Advisor
- J. A. Weim, Senior QC Inspector
- V. C. West, Planning Supervisor

Other licensee employees contacted included foremen, engineers, technicians, operators, mechanics, electricians, security force members, and office personnel.

#### NRC Resident Inspectors

- M. Branch, Senior Resident Inspector
- J. Luehman, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on April 12, 1985, with those persons indicated in paragraph 1 above. The inspector described the

areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

Violation 338, 339/85-11-01, Inadequate Review of Procedures for Reactor Trip Breaker Maintenance - paragraph 9.a.

Violation 338/85-11-02, Failure to Follow Procedure During Performance of Work Order 9344 - paragraph 10.b.

Unresolved Item 338, 339/85-11-03, Review Licensee Methods for Revising Purchase Requisitions - paragraph 7.a.

Unresolved Item 338, 339/85-11-04, Retrieval of Maintenance Work Order Package No. 8736 - paragraph 10.a.

Inspector Followup Item 338, 339/85-11-05, Work Order Processing - paragraph 7.b.

Inspector Followup Item 338, 339/85-11-06, Review Changes in Procedure ADM 16.5 for Processing Emergency Work Orders - paragraph 7.c.

Inspector Followup Item 338, 339/85-11-07, Clarification of QA/QC Responsibilities in Procedures - paragraph 8.e.(7).

The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

### 3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

### 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.

Two new unresolved items identified during this inspection are discussed in paragraphs 7 and 10.

### 5. Background

In February 1983, the Salem Nuclear Power Station experienced two failures of the reactor trip system upon the receipt of trip signals. These failures were attributed to Westinghouse - Type DB-50 reactor trip system (RTS) circuit breakers. The failures at Salem on February 22 and 25, 1983, were believed to have been caused by a binding action within the undervoltage trip attachment (UVTA) located inside the breaker cubicle. Due to problems of the circuit breakers at Salem and at other plants, NRC issued Generic Letter 83-28, Required Actions Based on Generic Implications of Salem ATWS Events, dated July 8, 1983. This letter required the licensees to respond on immediate-term actions to ensure reliability of the RTS. Actions to be performed included development of programs to provide for post-trip review, classification of equipment, vendor interface, post-maintenance testing, and

RTS reliability improvements. The licensee responded to Generic Letter 83-28 by correspondence dated November 4, 1983, February 8, 1985, March 29, 1985 and April 1, 1985. This inspection was performed to review the licensee's current program, planned program improvements, and implementation of present procedures associated with post-trip review, equipment classification, vendor interface, post-maintenance testing, and reactor trip system reliability for North Anna Units 1 and 2.

#### 6. Post-Trip Review

The licensee was requested in Generic Letter 83-28 to describe their program procedures and data collection capability to assure that the causes for unscheduled reactor shutdowns, as well as the response of safety-related equipment, are fully understood prior to plant restart. The licensee's response to GL 83-28 gives a detailed description of the program and procedures pertinent to performing post-trip reviews. The inspectors reviewed their responses, appropriate procedures, and interviewed responsible licensee personnel to assess the adequacy of the licensee's program for post-trip reviews. The results of this inspection are discussed below:

The post-trip review program is addressed and implemented by North Anna Power Station Administrative Procedure ADM-19.18, Post Trip Review.

The Shift Supervisor is responsible for determining the cause of any reactor trip. He documents his findings on the "Reactor Shutdown and Trip Report Form" (Attachment A to ADM-19.18).

The Shift Technical Advisor (STA) is responsible for conducting an independent evaluation of the reactor-trip event. His activities are documented by the completion of the "Post-Trip Review Report" (Attachment B to ADM-19.18).

Any unplanned manual or automatic reactor trip will require a full post-trip review report and the assembly of an associated data package which includes control room strip charts, sequence of events recorder printout, the P-250 Alarm typewriter printout, and the P-250 Post-Trip review printout.

Reactor trip events are classified in two categories. In a Class I reactor trip the cause of the trip is clearly understood and corrected and no significant malfunctions of safety-related or important equipment occurred. The Superintendent of Operations is authorized to make the restart decision for Class I reactor trips. A Class II reactor trip event is one where the cause of the trip is not clearly known, or safety related and/or other important equipment functioned in an abnormal or degraded manner during or following the trip. Following a Class II reactor trip event the restart decision is made by the Station Manager or Assistant Manager, with concurrence of the Station Nuclear Safety and Operating Committee (SNSOC) and the Superintendent of Operations.

The Post-Trip Review Report is presented to SNSOC for review within 30 days of the event. Within seven days of the final SNSOC review, the post-trip

review data package is sent to the Safety Evaluation and Control (SEC) staff for an independent review of the adequacy of the trip review and corrective actions. The post-trip review data package is retained in Station Records for the life of the plant.

The inspector reviewed the post-trip review data packages generated for twelve reactor trips that occurred in 1984. The packages were thorough and adequately documented the events.

The inspector conducted a review of licensee procedures and verified that procedures were consistent with licensee responses to GL 83-28. The procedures listed below were reviewed:

- ADM 1.2, Safety Engineering Staff, dated May 24, 1984
- ADM 1.0, Station Organization and Responsibility, dated April 18, 1984
- ADM 2.14, Reactor Operator License Training, dated March 31, 1983
- ADM 2.15, Senior Reactor Operator License Training, dated March 31, 1983
- ADM 2.16, Shift Technical Advisor Training, dated March 31, 1983
- ADM 5.3, Review of Procedure, dated October 25, 1984
- ADM 19.18, Post-Trip Review, dated January 10, 1985
- ADM 19.19, Return to Power Following a Trip, dated March 31, 1983

Each unit at North Anna has a Westinghouse P-250 process and alarm computer, which contains a sequence of events (SOE) program. The SOE program monitors the status of selected reactor trip signals and initiates the recording and print subroutines when a change in the status of the monitored parameters is detected. The SOE program prints out on the utility typewriter in the control room. Following a reactor trip on December 31, 1984, when part of the SOE data was lost due to a typewriter ribbon malfunction, a change to the computer software was initiated to provide storage of SOE program data on disc in addition to the hard copy provided to the typewriter. Part of the STA's daily turnover is to ensure that the computer is set up to automatically store SOE data should a reactor trip occur. The power source for the plant computer is an inverter fed from one of the station's Class 1E batteries or via a transformer from a 4160 VAC emergency bus.

Each unit at North Anna also has an independent Hathaway Sequential Events Recorder (SER), which monitors selected reactor trip, turbine trip, Engineered Safety Features (ESF), generator, and miscellaneous control system alarms. The SOE information is automatically printed on a paper tape by a teletype printer. The power source for the SER is from a Class 1E vital bus.

The licensee is in the process of installing the Safety Parameter Display System (SPDS) data collection and processing system associated with the NUREG-0737 upgrade of Emergency Response Facilities. This system should enhance data collection capabilities.

The current data and information collection systems appear to be adequate for the evaluation of unplanned reactor trips. The licensee is considering

replacing both the Westinghouse P-250 computer system and the Hathaway SOE recorder system with more modern equipment to further enhance data and information collection capabilities.

The inspector reviewed a report prepared by the licensee's Safety Engineering Staff entitled, "An Introductory Report of the North Anna Reactor Trip Data Base 1981-1984." The report sorted and graphed the reactor trip data base in an effort to identify primary and secondary causal factors. It is part of the management effort to reduce the number of reactor trips per year. The report also provides information useful in performance of ADM-19.18, Post-Trip Review, in comparing reactor trip events with previous similar events.

Interviews with licensee personnel revealed that plant personnel preparing and/or reviewing the post-trip documentation were familiar with plant systems, equipment, and plant operation. Training had been performed and rescheduled periodically and training records were being maintained.

Procedure review revealed that the procedures provide for review of information from the trip and requires comparison with information derived from normal or expected operations and previous shutdowns from similar situations. Procedures also require the identification of Post-Trip Review reports and accompanying data as Quality Assurance (QA) records and for their storage in Station Records.

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

## 7. Equipment Classification

The licensee was requested in GL 83-28 to confirm that all components of the reactor trip system whose function is required to trip the reactor are identified as safety-related on documents, procedures, and information handling systems used in the plant to control safety-related activities, including maintenance, work orders, and parts replacement. In addition, the licensee was requested to describe their program for ensuring that all components of other safety-related systems necessary for accomplishing required safety functions are also identified as safety-related on information handling systems used at the plant. The licensee's response to Sections 2.1 and 2.2 of GL 83-28 gives a detailed description of the program and procedures for safety-related equipment classification. The inspector reviewed their response, appropriate procedures, and interviewed responsible licensee personnel to confirm that the licensee's program for equipment classification was adequate and consistent with their response to GL 83-28.

The inspector examined the following procedures and documents:

Administrative Procedure 2.1, Classification of Systems, Components and Structures, Revision 11-29-84

Administrative Procedure 4.0, Procurement Document Control, Revision 1-10-85

Administrative Procedure 4.1, Purchase Requisition/Order Procedures, Revision 1-18-85

Administrative Procedure 16.4, Maintenance Program, Revision 12-14-83

Administrative Procedure 16.5, Work Requests, Revision 12-11-84

Administrative Procedure 16.6, Marking of Equipment Requiring Maintenance, Revision 12-14-83

Administrative Procedure 16.7, Maintenance Reports, Revision 10-4-84

Administrative Procedure 16.8, Use of Procedures During Maintenance

Administrative Procedure 16.16, Safety-Related Equipment Failure Analysis Program, Revision 4-9-85

VEPCO Power Station Quality Assurance Manual (PSQAM), Appendix A

Work Orders 019374, 019543, 019561, 019562, 019563 and 019565

Repeat Purchase Requisition No. 0341028

Standard No. STD-GN-0011, Guidelines for Procurement Document Reviews

The inspector concluded through discussions with licensee personnel and by review of the above procedures and documents that the licensee's program for equipment classification included the following elements:

Plant and component control for classification of structures, systems, and components as safety-related were being implemented.

The licensee has developed a program to assure that safety-related or nonsafety-related maintenance activities are identified during the planning stage.

Personnel participating in activities impacting safety-related structures, systems, and components were aware of the appropriate level of QA controls.

Written directives assigned principal responsibility for satisfactory completion of procurement and maintenance activities associated with safety-related structures, systems and components.

Personnel performing activities impacting equipment on the safety listing have received indoctrination and training.

Repairs to equipment to correct failures, malfunctions, deficiencies, deviations, defective material, and nonconformances were performed, documented, and reviewed to determine reliability of replacement components.

Other details of the inspection are discussed below:

Administrative Procedure ADM-2.1 is the procedure used by the licensee to determine the safety classification of structures, systems and components at North Anna. The procedure in conjunction with the PSQAM forms the basis for the licensee's program for equipment classification as described in their response to GL 83-28. The licensee uses the procedure in completing work requests, maintenance work orders, purchase requisitions, purchase orders, etc., to classify components as safety-related or non-safety related prior to performing work. The procedure does not identify all safety-related components and sub-components; however, it delineates criteria for the proper classification of all safety-related components and sub-components. The inspector observed that the licensee has established additional classifications in the procedure for structures, systems, or components which are not safety-related by the definition of GL 83-28 or 10 CFR 100 but for management reasons require administrative controls. These classifications are identified as Administrative A1 and A2.

Administrative Procedure ADM-2.1 is reviewed and approved by the SNSOC in accordance with Administrative Procedure No. 5.4. Additional changes to the procedure require the same level of review and approval. The procedure also provides for evaluations to be performed by the STA to reclassify plant systems, as safety-related or nonsafety-related. The evaluations are documented on Equipment Classification Requests and are reviewed by both the Superintendent of Operations and SNSOC. Upon approval by SNSOC the equipment classification requests will be incorporated into the procedure as a procedure revision.

The inspector reviewed Administrative Procedure ADM-2.1 and verified that the reactor trip breakers and bypass breakers of the reactor-trip system were included in the classification list as safety-related.

The inspector also determined that the licensee stamps corrective maintenance, surveillance, and calibration procedures as safety-related or nonsafety-related.

During the entrance meeting, the licensee informed the inspectors that a more detailed listing of safety-related components will be developed and that the schedule for completion of the safety list will be submitted to NRC by July 1, 1985. This schedule is in accordance with the licensee's response to GL 83-28, dated February 8, 1985.

The inspector discussed with the licensee their procedures for processing work requests, work orders, purchase requisitions, engineering work requests, purchase orders, and trending reports. Samples of documents were also examined to verify that documents were properly classified and approved as required by procedures. Several deficiencies were identified and are discussed below:

a. Purchase Requisition Development and Processing

Discussions with the licensee concerning the processing of Repeat Purchase Requisition No. 0341028 revealed that the part number on the purchase requisition was revised based on a verbal conversation with the vendor. The part number was originally identified as P/N-KRP11DG and the vendor states that the new part number is P/N-KRPA11DG. The licensee indicated that their procedures require the vendor to submit all technical information on components they are quoted in the bid which are different than what is identified in the request for bid. In this case the vendor failed to provide this information; therefore, a telecon between the licensee and the vendor was held to determine if this change affected the equipment. The vendor at this time informed the licensee that the change was only internal to the vendor's organization. Subsequently, the Purchase Requisition was revised and reapproved by both Site Engineering and Quality Control (QC). The inspector informed the licensee that the purchase requisition should not have been revised until appropriate documented evidence had been received from the vendor. The licensee committed to incorporate in Purchase Order No. P.O. NS12523 a requirement that the vendor must provide documentation certifying that the part number change is only a change in the vendor's organization and not a change in manufacturing or design. This matter is unresolved until documentation is provided by the vendor to attest to the reasons for the change in part numbers. This item is identified as Unresolved Item 338, 339/85-11-03, Review Licensee Methods for Revising Purchase Requisitions.

b. Work Requests and Work Order Processing

The licensee is developing extensive changes to Administrative Procedures 16.5 and 16.7. These procedures control the identification, planning, approving, and documenting of maintenance work activities. The licensee recently converted to a computerized Work Planning and Tracking System (WPTS) for processing work orders. In reviewing these procedures and document packages associated with these procedures, the inspector observed that Work Order (WO) records were annotated with procedures different than what was originally specified on the Work Order Form by the planner. In addition, the Work Order Form had a column titled "procedure used" indicate by circling Y or N. This column was not addressed in the procedure. The licensee indicated that the Work Order System is new and the procedures may require some revising to clarify some items identified on the WO Forms. However, the licensee indicated it is not a procedure requirement that the craft must use the procedure referenced on the WO. The inspector acknowledged the licensee's comments and informed the licensee that to eliminate confusion on how the WO is to be implemented that Procedure 16.7 should be revised indicating how the WO is to be used. The licensee indicated that this concern would be reviewed and appropriate procedure revisions will be made. An additional concern was identified to the licensee regarding WO processing. On WOs that cannot be worked due to lack of parts or plant configuration the WO packages are retrieved from the craft foreman and stored in a holding file in the Planning Department until the maintenance can be rescheduled. The

inspector informed the licensee that this flow path for WOs is not discussed in Administrative Procedure 16.7 and may result in work being performed to a superseded procedure which is contained as part of the original WO package in the file. These concerns were identified to the licensee as Inspector Followup Item 338, 339/85-11-05, Work Order Processing.

c. Trending of Safety-Related Failures

The licensee has developed a program to trend failures of safety-related equipment. The procedure that controls this activity is Administrative Procedure ADM-16.16, Safety-Related Equipment Failure Analysis Program. This procedure was first issued on January 31, 1985, as a result of an NRC violation. Administrative Procedure 16.16 states that the trending evaluations will be performed by Safety Evaluation Staff (SES) and findings will be reported to management. The inspector discussed the trending program with SES and Planning personnel. Discussions revealed that no failure trends have been identified to date. However, this program is new and the trending file is still being developed.

To verify that the licensee was implementing the requirements of the above procedure the inspector examined trending data submitted to SES by the Planning Department. One minor discrepancy was identified while examining the Equipment History Reports. Administrative Procedure ADM-16.16, paragraph 4.3, requires the Planning Supervisor to search the WPTS monthly for safety-related component maintenance and send the results to SES, along with corresponding copies of Equipment History Forms. In reviewing the monthly printouts, the inspector selected Work Order No. 019409 for examination to determine if all the appropriate information required by Administrative Procedure 16.16 had been sent to SES by the Planning Department. Discussions revealed that an Equipment History Form was not prepared for Work Order No. 019409 because the Work Order was processed as an Emergency Work Order in accordance with Procedure ADM-16.5, Work Requests (Revision 12-11-84), paragraph 3.4, which does not require that an Equipment History Form be generated. The licensee indicated that this was an oversight and had been identified on the proposed revision to Procedure ADM-16.5. The inspector reviewed the procedure mark-up prepared by the Planning Supervisor and confirmed that requirements would be added to the procedure for initiating an Equipment History Record when processing Emergency Work Orders. The licensee committed to have the procedure revised by April 30, 1985. This item was identified to the licensee as Inspector Followup Item 338, 339/85-11-06, Review Changes In Procedure ADM-16.5 for Processing Emergency Work Orders.

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

## 8. Vendor Interface and Manual Control

The inspector reviewed the licensee responses to GL 83-28 which described their program for vendor interface and control of vendor and other industry technical information. Their responses and pertinent information on vendor interface activities are discussed below.

The licensee's response dated November 4, 1983, stated that the licensee was reviewing their existing vendor program procedures and were revising as necessary. The licensee also stated that a comprehensive program would be developed to ensure that vendor information is current, complete and controlled at North Anna 1 and 2. A subsequent licensee response dated February 8, 1985, presented an update on the vendor interface activities. Schedules showing the status of vendor interface and manual control were also presented. The licensee's letter dated April 1, 1985, stated that they had obtained from Westinghouse (W) (vendor for the DB-50 shunt trip attachments) the Equipment Qualification Data Test Reports for the DB-50 shunt trip attachment and shunt trip panels and that the equipment met IEEE-323-1974 and IEEE-344-1975 as specified in WCAP-8587. Additional information concerning recommendations from the Westinghouse Owners Group (WOG) on the periodic maintenance activities on the reactor trip breakers had been evaluated and a response submitted to NRC by letter dated March 29, 1985. Applicable maintenance and inspection activities recommended by WOG had been incorporated into the periodic maintenance procedures. Based on the above, the licensee is contacting the vendor supplying the reactor trip system equipment, is evaluating the vendor recommendations, and is utilizing applicable technical data in plant procedures.

The inspector reviewed the licensee's procedures, vendor technical manuals, vendor correspondence, licensee inter-departmental correspondence, and other documents associated with vendor interface and control. This included technical information received from vendors, other licensees, industry sources, NRC, and the Institute of Nuclear Power Operations (INPO). The review revealed that the procedures were consistent with the licensee submittals. The procedures established controls to help assure that vendor and other technical information were obtained, kept current, distributed, evaluated, and utilized in plant operations, maintenance, and testing activities. Documents reviewed are discussed in the following paragraphs.

- a. Administrative Procedure 6.18, Control of Vendor Manuals, Vendor Files and Interface, dated October 25, 1984. This procedure described the methods used to control vendor interface and vendor technical documents pertaining to safety-related equipment, materials, and services. The procedure also assigned responsibilities to certain groups and individuals for monitoring industry wide reports, receiving and tracking technical information, resolution of technical problems, and controlling the distribution, changes to, and filing of vendor and industry technical information. Examination of documents and discussions with cognizant personnel verified that these activities

were being performed as specified in the procedure. Supporting documents examined are listed below:

Index of Controlled Vendor Manuals which cross indexes vendor, manual number, equipment specification, and if safety-related. The index consists of two books, one includes W Vendor Manuals and the other includes all other vendor manuals which are listed by vendor name.

Standard licensee letter to vendors requesting latest technical information on equipment purchased for North Anna. Discussions revealed that vendor response was about 40%; therefore, other followup will be initiated.

Response from Harris Instruments, Inc. to licensee dated March 5, 1985

Card Indexing System that keeps track of the latest vendor manuals and who a copy has been distributed to.

W Technical Bulletin (TB) 84-06, Reduced Auxiliary Feedwater Flow Rate, dated July 19, 1984

W TB 84-08, Inverter Capacity Connections, dated March 19, 1985

W TB 84-10, Internal Short in Barton Equipment, dated February 27, 1985

W TBs 84-11 and 85-01 thru 06 concerning Static Inverter and Reactor Coolant Pumps

W TB 84-09, Seal Table Leaks, dated October 19, 1984

Licensee's Evaluation, Changes to MMP-C-RC-9, and QC Comments on Procedure Change resulting from W TB 84-09.

W Instruction Book 24-Y-8645 dated December 1972 for Reactor Trip Switchgear. This book also contained: Revisions dated June 1981 and February 1984; DCP 84-05; W TB 83-03; NRC Bulletin 83-01; letters from W; W TB 83-02; and other current information. This examination verified that the vendor manual was being kept current.

WOG Maintenance Program (WOG 83-296) for DB-50 Breakers

Manual 9002-VLM-001, Reactor Vessel Level Monitor, Volume 2, which included the manufacturer's descriptive literature for assemblies used in the Vessel Level Monitoring System

W CAP - 8330, W ATWS Analysis

Instruction Manual for W Control Valves

- b. Document Control Manual (DCM) Procedure DCM-75, Procedure for Vendor Manuals and Files dated January 3, 1985. This procedure established guidelines for processing and distribution of vendor manuals and files. This procedure provides for the control of new manuals received on site, technical manuals received at schools, revisions to old manuals, assignment of manuals and responsibilities for updating, stamping as safety-related, upgrading manual index books, and recording of information on the Document Record Cards. DCM-75 also has several attachments which are used to transmit information and to further control the review, revision, and use of the manuals and files. Attachment 6, Safety-Related Equipment List, to DCM-75 includes a listing of all plant safety-related systems, associated components, plant identification number (Mark No.), manufacturer's name, equipment specification number, NPRDS ID number, and individual manual identification number. Review of associated documents and observation of ongoing activities in the Station Records area revealed that vendor manuals and other technical information are being processed and controlled as specified in DCM-75. The Station Records Group plans to perform a bi-monthly audit of manual control activities. Several of these audits have been done on W manuals and the licensee stated that the audit of other vendor manuals will begin soon. Discussions were held concerning the merits of DCM-75, particularly Attachment 6, which provides an excellent reference check sheet for the safety-related technical manuals, and the advantages of including a cross reference to plant procedures applicable to each technical manual.

Other licensee ongoing activities related to vendor interface and manual control are discussed below:

Vendor History Files have not yet been established. Station Records is following this program and stated that vendor files would be generated, where manuals were not available, to include technical information.

Licensee has obtained a technical manual index from W and is in the process of checking W index against the Station Records Index.

Licensee is presently evaluating Nuclear Utility Task Action Committee (NUTAC) program and expects to have their procedures reviewed by July 1985.

North Anna is participating in the INPO SEE-IN and NPRDS programs.

- c. Administrative Procedure ADM-16.14, Commitment Tracking System (CTS) Program, dated October 25, 1984. This procedure established a method to help assure that all vendor technical manuals, vendor recommendations, and other technical information from other sources (NRC, INPO, vendors, WOG) are properly distributed, reviewed, documented, and corrective actions incorporated into applicable plant procedures and/or

activities. This procedure assigns the overall responsibilities for the administration of the procedure to the Site Licensing Coordinator. The Licensing Coordinator assigns a CTS outstanding item (OI) number to each document and assigns responsibilities for resolving the outstanding item. These data are entered on an OI Form and also into the computer for tracking. Computer printouts listing OIs are sent to each department bi-weekly, and a listing of delinquent items or near completion dates are issued daily. Corrective actions are reviewed by the Licensing Coordinator and all documents are treated as QA records. Implementation of the above verifies the commitment made in the licensee's response to GL 83-28 to strengthen his record keeping and commitment tracking system.

d. Licensee Audit Activities on GL 83-28

Discussions were held with QA personnel concerning their activities associated with GL 83-28 and applicable audit reports were reviewed. Results of the above revealed that QA has been active in the majority of the activities concerning the reactor trip breakers. They had attended meetings at the corporate level concerning the periodic testing and preventative maintenance program for the DB-50 breakers. Other activities performed by the QA/QC Department included the following:

- (1) Review of WOG Breaker Report No. WOG 83-296
- (2) Review of EMP-P-EP-8 and 8A, Reactor Trip Breaker Maintenance
- (3) Review of October 1, 1984, letter on development of Nuclear System "Q" List
- (4) Developed RTS audit checklist in conjunction with Surry Plant
- (5) Performed Audit No. N-83-39 dated September 19, 1983, on ATWS activities
- (6) QC Group performs surveillances on testing and maintenance operations
- (7) Performed Audit No. N 84-20, Station Records, dated July 30, 1984
- (8) Reviews changes to technical manuals
- (9) Reviews technical bulletins and responses
- (10) Performed a comparison of field copies of manuals against Station Record's master copies
- (11) Audit of Technical Specification requirements

The inspector noted that the QA Department had not been active in reviewing Post-Trip Review Data prior to restart, nor in the review of Administrative Procedure 19.18, Post Trip Review, dated January 10, 1985. Licensee personnel stated that QC (a part of the QA department) reviewed the procedures. Also, the QA Department has not performed an audit of RTS modification done on Unit 2. Licensee personnel stated that they are planning to perform a complete audit of work performed on both units after all of the modifications are complete.

The QA Group has not audited Post-Trip Review Data Packages to determine if all procedures and activities associated with Post-Trip Review were implemented. There is no regulatory or licensee procedure requirement that requires QA to audit data packages.

The QA Group does not audit electrical maintenance procedure completed data packages; however, QC signs off on Hold Points.

The QA staff does not review completed data sheets for reactor-trip breaker test data. The licensee stated that the QC sign offs are the same as QA. The inspectors disagreed with this concept, even though both QA and QC personnel report to the QA Manager. For further discussion, see paragraph 8.e.(7).

e. Other Documents Reviewed

Other documents reviewed to determine if vendor manuals and other technical information and recommendations were being incorporated into plant procedures are listed below:

- (1) PT-36.6, Reactor Protection Response Time Testing - U.V. Coil, Breakers, and Gripper Coil, Rev. 1, dated May 8, 1981. This procedure had referenced TS, W, and S&W Drawings.
- (2) EMP-P-EP-8 dated May 22, 1984, Reactor-Trip Breaker Preventative Maintenance for Breaker 1-RT-A. This procedure referenced Vendor Manual I.B. 24-Y-8645, Reactor Trip Switchgear Maintenance Program (10/14/83)
- (3) EMP-P-EP-3A dated March 25, 1985, for Breaker No. RTA Serial No. 124Y8646B
- (4) Licensee intra-office correspondence (June 22 and July 13, 1984) concerning review of WOG recommendations on RTS tests and maintenance activities
- (5) Bi-monthly audit of vendor manuals by Station Records dated March 25, 1985
- (6) Administrative Procedure ADM-5.3, Review of Procedures, dated October 25, 1984

- (7) Administrative Procedure ADM-5.4, Processing New and Revised Procedures, and Deletion of Procedures, dated March 14, 1985. This procedure establishes guidelines for processing and approval of procedures. Paragraph 2.4 of the procedure specifies that QA will review; however, Attachments 1 and 3 to the procedure specify "Review by Supervisor of Quality Control". Due to some of the problems found during procedure and data review, the inspectors discussed the above discrepancies with licensee management. As QA review and signoff is specified in several paragraphs (3.2.8 and 3.2.9 are examples) of this procedure, the inspector requested that the procedure be reviewed, definitions of QA and QC be stated, and that QA and QC responsibilities associated with procedure and Performance Test (PT) data review be specified. This is Inspector Followup Item 338, 339/85-11-07, Clarification of QA/QC Responsibilities in Procedures.

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

#### 9. Post-Maintenance Testing (Reactor-Trip System Components)

The inspector reviewed the licensee's post-maintenance testing procedures and activities to determine if the licensee's response to GL 83-28 were being implemented at North Anna Power Station. The inspector examined procedures, examined completed maintenance work orders, reviewed test procedures and observed equipment used in the maintenance and testing of the Reactor Trip Breakers (RTBs) to determine the adequacy of the licensee's post-maintenance test program. The inspector interviewed pertinent licensee personnel to determine their knowledge and implementation of the program. The findings of the inspection are as follows:

- a. The licensee followed Electrical Maintenance Procedure EMP-P-EP-8, "Reactor Trip Breaker," Revision 6, in the maintenance of the reactor trip breakers RTA and RTB, and the bypass breakers BYA and BYB. The maintenance per this procedure was performed during fuel load on an 18-month cycle. To meet the requirements of GL 83-28, the licensee initiated Electrical Maintenance Procedure EMP-P-EP-8A, "Reactor Trip Breaker 6 Month Maintenance," Revision 0, dated March 25, 1985. This new maintenance procedure was developed to facilitate testing every six months while the unit was on line; however, the original procedure, EMP-E-EP-8, was retained for the 18-month maintenance performed during fuel load.

These two procedures outlined a complete maintenance of the RTBs. They list the references for use during maintenance; they note the prerequisites of the system prior to start of maintenance work; they describe the tools and special equipment needed, and they state the initial conditions of the power plant itself. The procedures cover a step-by-step maintenance of the RTB. Sign off spaces are provided to the left of each paragraph for the person performing the maintenance to place his initials. QC hold points are similarly signed off to the left of each paragraph. Each of the procedures has three attachments:

- Attachment 1 has figures and a table

- Attachment 2 has a data package to record the measurements taken in the maintenance
- Attachment 3 has more figures/tables.

Although the procedures appeared to be technically adequate, a detailed review revealed several shortcomings and discrepancies which have the potential for misinterpretation and inadequate implementation. A further review of VEPCO's QA Program revealed that VEPCO's Quality Assurance Program requires that procedures, instructions, and drawings be reviewed to assure they are adequate and contain quality requirements. Administrative Procedures 16.8, 5.3, and 5.4 were established to implement the above requirements; however, as mentioned above and stated below, the review of Electrical Maintenance Procedures EMP-P-EP-8 and 8A by the licensee was administratively inadequate. This constitutes Violation No. 50-338, 339/85-11-01, Inadequate Review of Procedures for Reactor Trip Breaker Maintenance. Examples of procedure inadequacies are listed below:

- (1) The title on the cover sheet of EMP-P-EP-8 was not complete. It did not identify the procedure for use as either the six-month-maintenance or the 18-month maintenance. An examination of the companion procedure EMP-P-EP-8A clearly identified it as the procedure to follow in the six-month maintenance.
- (2) The sketches in the procedure were of a poor quality and they were hard to read.
- (3) The sketches did not match the written text. For example, paragraph 7.3.4 called for checking the main contact pressure, gap "G", as per Figure 1, Attachment 1. A search for the subject Figure in the procedure was made. Figure 1 could not be found anywhere in the entire procedure. There was, however, a Figure 3 on Page 1 of Attachment 1, showing the gap "G" in question. Numerous other examples of mislabeling of figures, or of non-labeling of figures were found throughout the entire procedure.
- (4) The table on page 7 of Attachment 1 was misleading. It lacked a title describing the table as a list of retaining rings. The second item on the list occupied two different lines, which could lead to the erroneous conclusion that it, in fact, represented two different items.
- (5) Several typographical errors exist in both EMP-P-EP-8 and EMP-P-EP-8A.
- (6) The inspector noted that paragraph 7.3.2 of both procedures stated that an electrician was to hold back the Undervoltage Trip Attachment (UVTA) reset lever by means of a wire; however, the practice at North Anna was to hold the reset lever back by tying the wire to a stud in the vicinity of the UVTA. It was noted that no

deviation form was initiated on this step in the data taken in May 1984 and March 1985 and the procedures have not been changed to reflect the method used to restrain the reset lever.

The above violation is similar to Violation 338/84-37-03 dated November 13, 1984; therefore, it appears that the licensee's corrective actions as stated in VEPCO response dated December 12, 1984, did not assure that all current procedures were adequately reviewed.

- b. Periodic Test (PT) Procedures 1-PT-36.12.1 (six-month schedule) and 1-PT-36.12.2 (18-month schedule). These procedures were the controlling documents for the reactor-trip breakers maintenance. In each of these procedures, the corresponding EMP was slated to be performed as part of the Periodic Test. The data generated in the Electrical Maintenance Procedure (EMP) were incorporated on a summary sheet in the PTs and trended. The trending of parameters from reactor-trip breaker maintenance was started at North Anna with the availability of data collected during the May 1984 maintenance. The following five parameters are being trended at North Anna.

- |   |            |
|---|------------|
| (1) Pre-cleaning Breaker Insulation Resistance  | (6 month)  |
| (2) Post-cleaning Breaker Insulation Resistance | (6 month)  |
| (3) Trip Force                                  | (6 month)  |
| (4) UVTA Dropout Voltage                        | (6 month)  |
| (5) Breaker Response Time                       | (18 month) |

The trending program appears adequate.

- c. A typographical error was also identified in the data package for Performance Test 1-PT-36.12.1 dated March 31, 1985. The inspector observed that the serial number shown for Reactor Trip Breaker A was wrong. The incorrect number was given as 1224Y8646B. The correct number is 124Y8646B. The licensee was informed of this discrepancy and committed to have the discrepancy corrected.

#### 10. Post-Maintenance Testing (All Other Safety-Related Components)

- a. Inability to Retrieve Work Package

The inspector requested five maintenance work order packages on safety-related components from the licensee; however, the licensee could only retrieve four of the five work orders requested. The licensee searched for the missing package (No. 8736, Mark 02-QS-P-2A) for four days, but was unsuccessful in tracking down the document. The licensee's inability to retrieve Maintenance Work Order No. 8736 in a timely manner constitutes Unresolved Item 50-339/85-11-04, Retrieval of Maintenance Work Order No. 8736.

b. Failure to Follow Procedures

The four work order packages retrieved by the licensee were examined by the inspector to determine if the work had been performed and documented as required by procedures. Three of the work packages were found acceptable. Examination of Work Order Package No. 5901009344, Repair and Testing of Containment Isolation Check Valve, dated July 17, 1984, revealed that all requirements of Mechanical Maintenance Procedure MMP-C-GV-1.2 were not properly signed off as required by Administrative Procedure 16.8, Use of Procedures During Maintenance, dated July 28, 1984. This procedure specifies requirements for the preparation and use of maintenance procedures. Paragraph 3.5 specifies that all maintenance procedures shall be provided with signoff blocks. Paragraph 5 of this procedure specifies that the master copy shall be kept up-to-date and shall be fully initialed. Contrary to the above, signoff steps 3.1, 6.2 and 9.1 in Mechanical Maintenance Procedure MMP-C-GV-1.2 were not properly initialed. These three procedural steps are discussed below:

- (1) Step 3.1 of MMP-C-GV-1.2 required the person performing the work to initiate a work order. The inspector noted that at that point in the test procedure, the work order had already been initiated. It had also been routed through Planning and Scheduling, the shop foreman, and the shift supervisor, and it had been placed in the hands of the performing tradesmen. However, the person performing the work signed this step off, and in so doing he attested that he had initiated a work order as directed.
- (2) Step 6.2 of MMP-C-GV-1.2 required the person performing the work to verify the isolation of the valve, the presence of tags, and that the system was in proper condition. This step was not signed off; therefore, it is not known whether the requirements were completed.
- (3) Step 9.1 in the acceptance section of MMP-C-GV-1.2 was not signed off by the person performing the work. Signing this statement attested to the fact that all problems had been satisfactorily corrected and that post maintenance checkout had been performed. Another concern was that the work order package had been accepted by three subsequent levels of review: the foreman, the operations department, and QA. The procedures are not explicit on what these three reviews are to accomplish.

The failure to properly signoff work as completed constitutes Violation 50-338/85-11-02, Failure to Follow Procedure During Performance of Work Order No. 9344.

11. Surveillance Testing

The inspector reviewed Periodic Test No. 2-PT-36.1, "Reactor Protection and ESF Logic Test," for Unit 2. This unit had been retrofitted with a Reactor

Trip Breaker Shunt Trip Attachment (Unit 1 modification is planned for late 1985). This surveillance test was performed on a 31-day rotating basis to each RTS system. The test took about 90 minutes to perform and it was conducted by a team of three to four instrument technicians (including a leader) and supported by an operator and an electrician. The test was conducted while the unit was on line.

The inspector found that the test procedure was detailed and appeared to be a comprehensive test of the Reactor Trip Breaker (RTB) system and its associated logic. Interviews revealed that the instrument technician was knowledgeable of the test procedure and examination of test data revealed that the test met the requirements of GL 83-28 in the area of reliability of the Automatic Actuation of Shunt Trip.

Other procedures and documents reviewed are listed below:

Electrical Maintenance Procedure EMP-P-EP-8, "Reactor Trip Breaker," Revision 6.

Electrical Maintenance Procedure EMP-P-EP-8A, "Reactor Trip Breaker 6 Month Maintenance."

Periodic Test No. 1-PT-36.6, "Reactor Protection Response Time Testing - U.V. Coil, Breakers and Gripper Coil," Revision 2.

Periodic Test No. 1-PT-36.12.2, "Reactor Trip Breaker and Bypass Breaker Refueling Inspection and P.M."

Periodic Test No. 1-PT-36.12.1, "Reactor Trip Breaker and Bypass Breaker Maintenance."

Periodic Test No. 1-PT-36.1, "Reactor Protection and ESF Logic Test," Revision 20.

Electrical Maintenance Procedure EMP-C-TSR-1, "Troubleshooting and Repair of Electrical Circuits," Revision 2.

Temporary Procedure TEMP-C-MOV-1, "Adjustment of Torque Switches on MOVs," expires January 1, 1985.

Mechanical Maintenance Procedure MMP-C-GV-1.2, "Check Valves in General," Revision 1.

Periodic Test No. 2-PT-36.2, "Reactor Protection and ESF Logic Test," Revision 15.

Periodic Test No. 2-PT-36.6, "Reactor Protection Response Time Testing - U.V. Coil, Breakers, and Gripper Coil," Revision 3.

Electrical Maintenance Procedure EMP-C-MOV-1, "Troubleshooting and Repair of Motor Operated Valves," Revision 1.

Administrative Procedure ADM-16.7, "Maintenance Reports," dated October 4, 1984.

Administrative Procedure ADM-5.4, "Processing New and Revised Procedures, Deletion of Procedures," dated March 14, 1985.

Work Order No. 5901013671, "Reset Torque Switch", dated August 31, 1984

Work Order No. 5901017746, "Adjust Packing on Valves," dated December 18, 1984

Work Order No. 5901014394, "Clean Contacts on K611 Relay," dated September 13, 1984