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

Report Nos.: 50-338/84-19 and 50-339/84-19

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 Dates: June 6 - July 5, 1984

Inspection at North Anna site near Mineral, Virginia

Inspectors: _____ 7/25/84
M. W. Branch, Senior Resident Inspector Date Signed

_____ 7/25/84
J. G. Luehman, Resident Inspector Date Signed

Approved by: _____ 7/27/84
S. Ebrod, Section Chief Date Signed
Division of Project and Resident Programs

SUMMARY

Areas Inspected

This routine inspection by the resident inspectors involved 254 inspector hours onsite in the areas of maintenance, surveillance, refueling activities, licensee event reports (LER), IE Bulletins, engineered safety features (ESF) walkdowns, organization and administration and follow-up of previously identified items.

Results

Of the eight areas inspected, one violation was identified in the area of maintenance and is discussed in paragraph 10.

REPORT DETAILS

1. Person Contacted

   Licensee Employees

   *E. W. Harrell, Station Manager
   G. E. Kane, Assistant Station Manager
   *M. L. Bowling, Assistant Station Manager
   L. Johnson, Superintendent, Technical Services
   J. R. Harper, Superintendent, Maintenance
   R. O. Enfinger, Superintendent, Operations
   G. Paxton, Superintendent, Administrative Services
   A. L. Hogg, Jr., QC Manager
   S. B. Eisenhart, Licensing Coordinator
   J. R. Hayes, Operations Coordinator
   J. P. Smith, Engineering Supervisor
   F. Terminella, Engineering Supervisor
   M. G. Pinion, Engineering Supervisor
   A. H. Stafford, Health Physics Supervisor
   E. C. Tuttle, Electrical Supervisor
   R. A. Bergquist, Instrument Supervisor
   D. E. Thomas, Mechanical Maintenance Supervisor
   L. B. Jones, Chemistry Supervisor
   *F. P. Miller, QC Supervisor
   J. A. Smith, QC Supervisor
   *A. D. Fraley, Project Manager, Power Improvement Projects
   *R. J. Hardwick, Manager, Nuclear Programs and Licensing

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

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on July 5, 1984, with those persons indicated in Paragraph 1 above. The licensee acknowledged the violation in Paragraph 10.

3. Licensee Action on Previous Inspection Findings

   Not inspected.

4. Unresolved Items

   Unresolved items were not identified during this inspection.

5. Plant Status

Unit 1

During this inspection period, the unit continued a scheduled refueling outage.

Unit 2

On June 11, 1984, the feedwater regulating valve (FWRV) for the 2A steam generator starting oscillating and local control of the valve was taken. It was determined that a copper air line had broken at the valve positioner; the line was repaired and the valve returned to its automatic mode. At 1328 on June 25, 1984, the reactor tripped on low steam generator (SG) level coincident with a feed flow-steam flow mismatch in 2A SG. This condition was caused by another copper air line failure on 2A FWRV which caused the valve to go closed. Subsequently, a number of the copper air lines to all the FWRVs were replaced with flexible stainless steel braided tubing and further replacements are planned.

When the reactor tripped the electrical load for the unit was automatically transferred to the reserve station transformers (RST). Upon initiation of this transfer the main feed water and condensate pumps for the unit were lost. Because of load restrictions on the RST a load shed logic is in place to prevent excessive load from both units being placed on the transformers simultaneously. With Unit 1 shutdown and being supplied from the RST, in addition to various electrical breakers being tested, the logic matrix was setup with some of the Unit 1 breakers indicating shut. Thus on the transfer large electrical loads such as the feedpumps were shed from Unit 2. It was verified by the licensee during the post trip review that the load shed functioned as designed. However, the licensee is considering procedure changes to avoid the unnecessary loss of equipment on one unit when the other unit is shutdown and does not actually require RST capacity.

6. Licensee Event Report (LER) Followup

The following LERs were reviewed and closed. The inspector verified 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 asterisk, a more detailed review was performed to verify that the licensee had reviewed the event, corrective action had been taken, no unreviewed safety questions were involved, and violations of regulations or technical specification (TS) conditions had been identified.

338/78-133	Loop A steam flow indicator (FI-1474) indicated abnormally high.
338/80-27	Abnormal noise in C steam generator flow.

*338/80-28	ESF actuation caused by an inadvertent high steamline differential pressure.
*338/80-65	Pressurizer protection channel III indicated abnormally high.
*338/80-100	Steam generator A level indicator (LI-1474) indicated abnormally high.
338/80-104	Environmental telemetry channel six for air temperature differential temperature was found out of calibration tolerance.
339/80-07	Tave protection channel (TE-2432D) failed high.
*339/80-29	PORV (PCV-2456) opened inadvertently and failed to reclose following maintenance.
*339/80-31	Pressurizer protection channels I, II and III found to all be indicating low.
339/80-101	Non-conservative constants entered into the FQ survey program.
*339/82-10	Various isolation valves could be reopened prior to resetting Phase A Isolation.
339/84-03	Unit taken off line for reactor trip breaker maintenance.
338/80-59	MOV-1885D would not open electrically.
338/80-78	1-FW-P-2 tripped.
338/80-102	Allowable range for setpoints - auto stop oil pressure.
339/80-59	Accumulator high - out of specification.
339/80-48	Feed flow sq. rt. converter reads high.
338/82-80	Containment isolation valve for service air found open and unattended.

(Closed) LER 338/80-28 Inadvertent Safety Injection. Report 338/80-26 closed item 80-13-02 which dealt with this subject.

(Closed) LER 339/80-29 PORV opened inadvertently and failed to reclose. the inspector verified that a more detailed maintenance procedure has been developed. This procedure includes a QC hold point for reassembly of the actuator bearing.

(Closed) LER 339/82-10 Design of valve control circuits permits operator to open valves without resetting the phase A isolation signal. This subject was addressed in inspection reports 338,339/83-18 in closing LER 338/82-30.

7. Followup of Previously Identified Items

(Closed) IFI 338/80-16-03 Safety Injection Actuation. This item identifies the concerns of LER 338/80-37, which was inspected and closed in inspection report 338/83-24.

8. ESF System Walkdown

The following selected engineered safety (ESF) systems were verified operable by performing a complete walkdown of the accessible portions of the systems.

Unit 2

June 27, 1984 - 2H Diesel Engine Cooling Water (2-OP-6.1A)
2J Diesel Engine Cooling Water (2-OP-6.2A)
2H Diesel Engine Lube Oil System (2-OP-6.3A)
2J Diesel Engine Lube Oil System (2-OP-6.4A)
Diesel Air (2-OP-46.4A)
Emergency Generator Fuel Oil System (2-OP-53.2A)

A number of minor problems were noted during the performance of these lineups. The drawings listed as references for 2-OP-6.1A, 2-OP-6.2A, 2OP-6.3A and 2-OP-6.4A no longer exist. Station drawing 11715-FB-35A which was referenced by 2-OP-53.2A had not been updated to reflect additional valves from 2EG-TK-2J and 2EG-TK-2H. Valves 2-EB-101, 2-EB-102, 2-EB-103 and 2-EB-104 were improperly labelled. Valves 2-EB-69 and 2-EB-39 had no labels, 2-EB-55 was missing a handle and 2-EB-76 had no handle or label. Finally, all the valves associated with EG-LS-203JA, EG-LS-203JB, EG-LS-203HA and EG-LS-203HB were not labeled. The valves were in fact lined up properly. Correction of these items is identified as Inspection Followup Item 339/84-19-01.

9. IE Bulletin

(Closed) 338, 339/80-BU-06 "Engineered Safety Feature (ESF) Reset Controls." The inspectors have reviewed the licensee's letter of June 12, 1980 and July 11, 1980 to the NRC. The first of these two letters listed the review done by the licensee and also included the required corrective actions Using the listed corrective actions and noting the classifications made in the July 1, 1980 letter, the inspector reviewed design changes 79-S75, 79-S76, 79-S79, 79-S82, 79-S83 and 80-S20 which implemented many of the corrective actions. All of the design changes have been installed and the inspectors have no further questions in this area.

10. Maintenance (62703)

The inspectors observed the maintenance activities being conducted by the licensee's Automation and Control (AC) personnel on June 13, 1984. A review of the procedures being used revealed that the initial conditions and prerequisites sections of EMP-P-RT-38 had not been signed with work on going in the body of the procedure. In EMP-P-RT-30, a number of second verification signatures for lifting and restoring electrical leads were unsigned. These failures to follow procedures apply to Unit 1 and are identified as violation 338/84-19-02. Violation 339/83-18-03 previously identified other instances of AC personnel failing to follow station procedures. On June 13, 1984, incorrect use of procedures and/or test equipment by an individual in this same group caused two events which resulted in the loss of off-site power to various electrical buses and the forced starts of one diesel on each unit.

11. Organization and Administration (36700)

The inspectors reviewed the structure and lines of responsibility of the licensee's onsite and offsite organizations, the qualification levels of various personnel in the onsite organization and the licensee's implementation of the NRC guidelines on the use of overtime.

North Anna Power Station Administrative Procedure ADM-20.3 "Hours of Work" dated February 15, 1984, established the administrative controls on hours of overtime. In the time period April - May 1984, the plant identified 23 personnel who exceeded the limits set forth in the procedure without the required approval. Because of this large number of failures to follow the procedure the importance of the requirement was re-emphasized to all station supervisors. On June 27, 1984, the Station Manager issued a memo to all station personnel restating the overtime requirements. Since the end of May 1984 there have been no further reported violations of the procedure and the inspectors have reviewed the onsite hours of selected personnel and found that these hours were within the administrative requirement. Comparison of the onsite and offsite organizations as outlined in TS Section 6.2, Organization, and the present organizations (recently changed in a reorganization) revealed numerous differences that the licensee is planning to address in a forthcoming change to TS.

Review of the training and qualifications of selected plant personnel showed they met the requirements of TS and the applicable codes and standards (ANSI/ANS-3.1-1978).

12. Respiratory Protective Device

Training and Qualification

During this inspection period, the inspectors attended a respiratory training course given by the licensee's training staff. In the course of the training it was stated that those people who had not had a physical examination could go over to the Nursing Station and complete a medical

questionnaire and the pulmonary function test in order to meet the requirements of 10 CFR 20.103(c)(2). The inspectors examined the questionnaire, which indicated a physical examination was required, and asked the licensee's staff why these examinations were not done. The staff responded that the pulmonary function test and the medical questionnaire were considered adequate to meet the requirements by the VEPCO corporate medical office. When asked if the guidance of IE Notice No. 84-24 "Physical Qualification of Individuals to Use Respiratory Protective Devices" had been considered - it recommended a cardiovascular examination as well as a pulmonary function test - the licensee responded that the IEN had been considered but the corporate guidelines were still considered adequate.

Subsequently, the VEPCO Quality Assurance staff determined that the reason the medical questionnaire required a physical examination while corporate policy required only a medical history and the pulmonary function test was, that the questionnaire in use at the time had been superseded. Attachment A of North Anna Power Station Administrative Procedure ADM 20.22 "Respiratory Protection Program - Medical Aspects" dated March 31, 1984, should have been the questionnaire in use and it does not contain the requirement for a physical examination, it only asks that the date of the individual's last physical be provided.

13. Limitorque Valve Torque Switch Setting

During this inspection period, the inspectors were notified, by the resident inspector at the Surry Nuclear Power Station, of an operational problem with Limitorque Valves. The problem was discovered during surveillance testing and involved the improper setting of torque switches. Specifically, the torque switch setpoints on Limitorque operators were being verified and adjusted with the valves tightly sealed and the spring pack charged.

Investigation at North Anna revealed the following:

a. Electrical Maintenance Procedure EMP-C-LS-1 did not require moving the valve off its seat prior to verifying or adjusting the torque switch setting.

b. The limitorque type SMB instruction and maintenance manual does not require moving the valve off its seat prior to verifying or adjusting the torque switch setting.

c. The procedure developed by Houston Lighting and Power Company, as part of the Maintenance Procedure Development Pilot Project coordinated by INPO, requires the valves be moved off their seat prior to verifying or adjusting the torque switch setting.

d. Experimentation at the North Anna training facility confirmed that the torque switch setting could not be properly verified or adjusted without taking the valve off its seat, which relaxes the torque switch spring pack.

e. Discussion with several site electricians verified that the valves were not being moved off their seats to verify torque switch setting.

The inspectors requested that the site electrical maintenance procedure (EMP-C-LS-1) be modified to specify the correct procedure for verifying torque switch settings. Additionally, it was requested that several valves be inspected using the modified procedure and, based on the results of the limited sample, a more detailed course of action be developed. This item is identified as Inspector Followup Item (IFI 338, 339/84-19-03).

14. Refueling Activities Unit #1 (60710)

During the inspection period, the Unit 1 core was off-loaded and those fuel assemblies to be reused in Core 5, were sipped. Refueling activities were delayed due, in part, to a higher-than-normal Iodine activity in the containment building which necessitated the use of respiratory protection. Fuel sipping revealed that 15 elements were leaking. The affected elements were eliminated from the Cycle 5 reload plan, making it necessary to develop a new cycle 5 plan.

The inspectors monitored selected core off-load and fuel sipping activities and ensured that approved procedures were being followed. Additionally, the inspectors verified that Performance Test (PT 91) Containment Integrity, was conducted at the frequency required by TS. The licensee's staffing during refueling was verified to meet TS requirements and housekeeping and material exclusion controls were observed and appeared to be adequate.

No violations or deviations were identified in this area.

15. Response To Transportation Accident Involving New Nuclear Fuel

On June 28, 1984, the inspectors were directed by Region II to respond to the scene of an overturned tractor-trailer truck transporting new fuel assemblies to the North Anna facility. The inspectors arrived at the scene of the accident, approximately one mile south of Cuckoo, Virginia on U.S. Highway 522 at 8:20 a.m. and offered assistance to the state and local law enforcement personnel and the licensee representative. The inspectors located and reviewed the transportation papers and verified that the radiation and contamination surveys taken by licensee health physics personnel were essentially the same as the surveys taken at the Westinghouse facility in Columbia, South Carolina prior to shipping. The inspectors observed local and state personnel respond to the event and discussed these observations with the Region II Director of State and Government Affairs.

The containers were off-loaded from the overturned truck by licensee personnel and transported approximately nine miles to North Anna on trucks provided by the licensee. The inspectors monitored the Westinghouse inspection of the new fuel containers and verified that the external condition of the containers was documented and evaluated by Westinghouse prior to shipping the fuel back to the Westinghouse fuel facility in Columbia, South Carolina.

The inspectors considered the licensee's response and followup to the event thorough and professional. The licensee's timely advice and assistance augmented the state and local government responses and provided additional assurance with respect to public health and safety concerns.

15. Routine Inspection

By observations during the inspection period, the inspectors verified that the control room manning requirements were being met. In addition, the inspectors observed shift turnover to verify that continuity of system status was maintained. The inspectors periodically questioned shift personnel relative to their awareness of plant conditions.

Through log review and plant tours, the inspector verified compliance with selected TS and the LCO.

During the course of the inspection, observations relative to protected and vital area security were made, including access controls, boundary integrity, search, escort, and badging.

On a regular basis, radiation work procedures (RWPs) were reviewed and the specific work activity was monitored to assure the activities were being conducted per the RWPs. Radiation protection instruments were verified operable and calibration/check frequencies were reviewed for completeness.

The inspector kept informed, on a daily basis, of the overall status of both units and of any significant safety matters related to plant operations. Discussions were held with plant management and various members of the Operations staff on a regular basis. Selected portions of operating logs and data sheets were reviewed daily.

The inspector conducted various plant tours and made frequent visits to the control room. Observations included: witnessing work activities in progress, verifying the status of operating and standby safety systems and equipment, confirming valve positions, instrument and recording readings, annunciator alarms, housekeeping and vital area controls.

No violations or deviations were identified in these areas.

17. Regional Office Review

The following items were evaluated by the Reactor Safety, Radiation Safety and Safeguards, and Reactor Projects regional staff. Based on this review and the results of the latest Resident and Region based inspection activities in the affected functional areas, the following items (unresolved, UNR; inspector followup, IFI; violations,SL_) were determined to require no additional specific NRC followup and are closed.

Unit 1

LER 80-28	Actuation of the ECCS occurred due to valve MS101C being open while NRV-MS101A and B remained closed.
IFI 80-35-02	Selection of parameters for auxillary shutdown panel
LER 80-34	Several Class II lines not stress analyzed for fluid temperatures which could be expected
LER 80-35	Potential for supplied control rod guide tube support pins to break due to stress corrosion cracking
LER 80-65	Pressurizer Protection Channel III level indication was higher than indications on channels I and II due to drift.
IFI 82-33-15	Reviewing and making appropriate changes in the post-accident sampling system
IFI 82-33-18	Displaying in-plant radiological conditions to improve exposure control
UNR 80-42-01	Fire hose not provided at each standpipe hose connection within reactor containment
IFI 80-12-01	Licensee made a commitment to institute a periodic inspection program for fuel handling equipment in accordance with ANSI B30.2 prior to next equipment use.
IFI 81-03-01	APDMS to be placarded to indicate that detectors must operate in alternate mode or FQ survey run weekly
IFI 81-09-02	Post test calibration of CILRT test equipment
IFI 82-37-02	Include calculations in procedure review package for new procedures
IFI 82-37-03	Make calculations and bases part of a master file during the biennial review of existing procedures
IFI 82-37-04	Determine and specify duration of RCS leak rate surveillance tests
IFI 83-C6-12	II.F.1 (Additional Accident Monitoring-Noble Gas Effluent Monitor) determine if monitor meets sensitivity and range requirements and other specifications in Table 11.F.1-1
IFI 82-C6-13	II.F.1 (Additional Accident Monitoring-Noble Gas Effluent Monitor) review operating procedures (include calculations method for converting monitor reading to release rate)

IFI 82-C6-14 II.F.1 (Additional Accident Monitoring-Noble Gas Effluent Monitor) review initial and periodic calibration with radioactive sources (including procedures)

IFI 82-C6-15 II.F.1 (Additional Accident Monitoring-Noble Gas Effluent Monitor) review training of personnel to operate, calibrate and interpret results

IFI 82-C6-16 II.F.1 (Sampling and Analysis of Plant Effluents) review collection of samples of gaseous releases of iodine and particulates (shielding, dosimetry, remote handling)

IFI 82-C6-17 II.F.1(2) (Sampling and Analysis of Plant Effluents) review transportation of samples to laboratory for analysis

IFI 82-C6-18 II.F.1(2) (Sampling and Analysis of Plant Effluents) review sampling system (isokinetic sample, absorber not degraded by moisture) see table II.F. 1-2

IFI 82-C6-19 II.F.1(2) (Sampling and Analysis of Plant Effluents) review initial, replacement & retraining of personnel to collect, transport & analyze samples

IFI 82-C6-20 II.F.1(2) (Sampling and Analysis of Plant Effluents) review sample analysis (shielding, dosimetry, remote handling, background radiation levels in facility, storage or disposal)

IFI 82-C6-21 II.F.1.(2) (Sampling and Analysis of Plant Effluents) review radiological aspects of procedures for sampling and analysis (including periodic maintenance & operability checks)

IFI 82-36-01 Use of standardization checks for CL-, F-, and boron analyses

LER 80-67 Mitigation system leak check not performed

Unit 2

IFI 82-37-01 Review methods for retaining engineers' calculations

IFI 82-37-02 Include calculations in procedure review package for new procedures

IFI 82-37-03 Make calculations and bases part of the master file during the biennial review of exiting procedures

IFI 82-05-67 Revise emergency plan IAW Attachment 2 of RPT 82-05

IFI 82-33-07 Providing work space away from reporters for Federal and State public information officers in the Richmond ENC

IFI 82-33-16 Reviewing the time for completion of accountability drills

IFI 82-33-17	Checking the technical basis of some portions of the dose assessment procedures
IFI 82-33-18	Displaying in-plant radiological conditions to improve exposure control
IFI 78-10-06	Identification of cable tray markers VLTR238F061678 (Licensee Identified Item)
IFI 78-24-03	Color coded cable separation in control boards (Licensee Identified Item)
UNR 80-39-01	Firehose not provided at each stand pipe hose connection within reactor building
UNR 80-39-03	Failure to implement fire protection modification requirements of operating license
IFI 82-36-01	Use of standardization checks for CL-, F-, and boron analyses
IFI 82-37-06	Failed to report abnormal fuel clad degradation
IFI 80-05-02	Service water radiation monitoring pumps not radiologically qualified for potential accident doses-Unit 1 LER 80-19
IFI 80-17-10	LHSI discharge lines not analyzed for temperatures below 70 degrees F - must be done before initial criticality
LER 82-52	One of the two reactor coolant system subcooling margin monitors filed
LER 82-83	EDG was removed from service for 6 hours and 8 minutes to replace a defective underexcitation alarm relay
IFI 82-08-07	License condition 2C(4) (E) prior to startup after first refueling safety related equipment shall be qualified
IFI 82-25-03	Licensee to take action to make over-pressure protection system more reliable with less nitrogen leaks
IFI 80-24-04	Charging pump flows may be inadequate for cooling following secondary high energy line breaks - W Part 21
IFI 80-05-03	Overstressed service water screen wash pipe support - IEB 79-01
IFI 80-05-04	Overstressed screen wash pipe supports-IEB 79-14, Unit 1 LER 80-04

IFI 80-27-01	Licensee detail in writing the valve weight decrease with resultant pipe stress increase MSK 1034Y U
IFI 80-33-02	Selection of parameters for Aux shutdown panel
IFI 81-16-06	Evaluate transformer installation in common dike area AITS F02700135