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

Report Nos.: 50-338/89-31 and 50-339/89-31

Licensee: Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, VA 23060

Docket Nos.: 50-338 and 50-339 License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: October 20 - November 17, 1989

Inspectors: S.M. Shaeffer FOR 12/22/89
J. L. Caldwell, Senior Resident Inspector — Date Signed

S.M. Shaeffer FOR 12/22/89
L. P. King, Resident Inspector — Date Signed

Approved by: M V Sinkule 12/22/89
P. E. Fredrickson, Section Chief — Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine inspection by the resident inspectors involved the following areas: plant status, maintenance, surveillance, ESF walkdown, operational safety verification, and action on previous inspection findings. During the performance of this inspection, the resident inspectors conducted reviews of the licensee's backshift operations on the following days: October 25, 26, and November 2, 15, 16 and 17.

Results:

No violations were identified during this inspection period, however, there were several weaknesses identified, examples are as follows: Another example of deficient maintenance procedures, due to lack of specific technical guidance, was demonstrated by the improperly adjusted low head safety injection discharge relief valve blowdown rings (paragraph 4); continuing operational leakage problems with the reactor coolant system loop resistance temperature detector bypass isolation valves; and a weakness identified with the scaffolding program in that sufficient controls were not in place to minimize the use of scaffolding around safety-related equipment (paragraph 6). One additional weakness was identified where the licensee still has numerous problems with the instrument air system and the schedule for the long-term corrective actions which the licensee committed to have in place by the end of the year appears to be optimistic (paragraph 6).

9001050201 891222
PDR ADOCK 05000338
Q PNU

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   M. Bowling, Assistant Station Manager
   L. Edmonds, Superintendent, Nuclear Training
   *R. Driscoll, Quality Assurance Manager
   *R. Enfinger, Assistant Station Manager
   D. Heacock, Superintendent, Engineering
   *G. Kane, Station Manager
   *W. Matthews, Superintendent, Maintenance
   T. Porter, Nuclear Safety Engineering Supervisor
   A. Stafford, Superintendent, Health Physics
   J. Stall, Superintendent, Operations
   V. West, Superintendent, Outage Management

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

   *Attended exit interview

   Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Plant Status

   Unit 1 began the inspection period on October 20 operating at approximately 100% power, day 93 of continuous operation. On November 9, an instrument air relief valve lifted resulting in the loss of the turbine building instrument air supply. As a result, service air was required to back up instrument air in the auxiliary building (see paragraph 6 for details). On November 9, the licensee conducted several containment entries to determine the source of the increasing unidentified RCS leakage. Based on observations in the containment and the knowledge of a previous leak on 1-RC-52, a "B" loop RTD bypass isolation valve, the licensee concluded the leak was coming from the "B" RCS cube and was most likely an increase in the 1-RC-52 leakage. This leakage rate continued to slowly increase over the rest of the inspection period and the measured unidentified RCS leakrate at the end of the inspection period was 0.46 gpm, below the TS limit of 1 gpm. On November 11, the unit started experiencing problems maintaining EHC pressure and the #4 turbine governor valve started fluctuating. This problem continued throughout the rest of the inspection period. Both the RCS leakrate and the EHC pressure problem were continuously monitored by the licensee and corrective actions were being considered. The unit concluded the inspection period operating at 100% power, day 121 of continuous operation.

Unit 2 commenced the inspection period operating at approximately 100% power, day 165 of continuous operation. On October 26 during a surveillance test of the "B" LHSI pump, a discharge relief valve lifted and failed to reseat (see paragraph 4 for details). This is the second time in the recent past that a LHSI pump discharge relief valve has lifted and failed to reseat during pump testing (see NRC Inspection Report 338,339/89-30 for details on the previous event). On October 31, the licensee commenced the TAVE reduction procedure for Unit 2. TAVE was being reduced from 586.8 degrees F to 580.8 degrees F to help minimize further degradation of the S/G tubes. The unit concluded the inspection period operating at 100% power, day 193 of continuous operation.

On November 2, 1989 a Russian Delegation consisting of three senior Soviet officials from the science and technology arena visited the North Anna Power Station. These Soviet officials were accompanied by Mr. E. Shomaker from the NRC Office of Governmental Affairs. The resident inspector met with the officials briefly during the afternoon and entertained several questions concerning the duties and responsibilities of the NRC and in particular the resident inspectors.

3. Maintenance (62703)

Station maintenance activities affecting safety-related systems and components were observed/reviewed, to ascertain that the activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with TSs.

On November 1, the inspector attended a prejob briefing being conducted in preparation for entries into the containment at power. These entries were being performed to repair a leak on the "A" S/G level instrument isolation valve, 1-FW-74. Administration Procedure 20.9, concerning containment entries, was reviewed during the briefing and it was determined that an initial entry would have to be made to determine personnel heat stress values using inside containment wet and dry bulb temperatures. The briefing also visually demonstrated the area in containment that would be entered. This demonstration was accomplished by the use of VIMS photography, which is a system that allows a photographic walkthrough of various areas of the containment. The staff was also informed that the dose rates, determined from a previous entry would be 200 millirem/hr gamma and 1 rem/hr neutron.

The inspector reviewed the evolutions associated with the maintenance activities and containment entries. The first entry, as discussed above, was performed to obtain containment wet and dry bulb temperatures. During the second entry the operators equalized and isolated the level transmitter in question, which resulted in the closure of 1-FW-74. Following the valve closure, which stopped the leak, the operators declared the "A" S/G level instrument inoperable and placed it in the tripped condition. A third entry into the Unit 1 containment was performed to place a collar, around 1-FW-74 to allow a stop-leak material, furmanite, to be injected into the area of the leak. Following the placement of the collar, the mechanics injected the furmanite material into the valve. On the fourth entry 1-FW-74 was reopened and the leak was verified to have been stopped. A fifth entry was made to fully unisolate the level transmitter and place it back in service. The operators then declared the level instrument operable and removed it from the trip condition. No problems were identified during the evolution.

On November 14, the inspector observed the maintenance performed on two safety-related steam traps in the Unit 2 main steam valve house. The first trap, 2-MS-T-7, a 1500 psig Velan steam trap off the main steam line, was being removed for overhaul. The second main steam trap, 2-MS-71, was being repaired in place for a body to bonnet leak. This repair involved the replacement of the gasket. No problems were identified.

No violations or deviations were identified.

4. Surveillance (61726)

The inspectors observed/reviewed TS required testing and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that LCOs were met and that any deficiencies identified were properly reviewed and resolved.

On October 26, the inspector witnessed portions of 2-PT-57.1B, ECCS Subsystem Low Head SI Pump (2-SI-P-1B). The test was completed satisfactory. However, during the test, a discharge relief valve, 2-SI-RV-2845B, lifted as a result of the pressure spike which followed the pump start and failed to reseat. This problem had occurred earlier during a Unit 1 LHSI pump test (see NRC Inspection Report 338,339/89-30 for details). The licensee determined that on Unit 1, the relief valve had lifted as required, but did not reseat because the blowdown ring had not been set properly. On Unit 2 the maintenance engineer inspected relief valve 2-SI-RV-2845B and found that the blowdown ring had also been set improperly. The blowdown ring was then adjusted in the presence of the maintenance engineer and the valve performed properly during the retest of the LHSI pump.

The licensee determined the root cause of the improper blowdown ring adjustment to be an inadequate maintenance procedure. The procedure MMP-C-GV-2, Safety and Relief Valve in General, is a generic procedure and consequently did not provide sufficient guidance to allow the mechanics to properly set the blowdown ring on this type of relief valve. The relief valve in question requires a different method for adjustment of the blowdown ring than the other valves used by the licensee. The licensee presently has six of these valves, three in each unit and has informed the inspectors that each of these valves has been checked to verify proper adjustment of the blowdown ring. As long-term corrective action, the maintenance engineering department will be preparing a specific procedure to cover these types of relief valves. This is another example of a weakness that has been discussed both in the SALP and previous inspection reports concerning maintenance procedures, which do not provide enough technical detail to complete a task without relying on either the experience of the mechanic or write-in steps added to clarify the procedure.

On October 30, the inspector observed the Unit 2 surveillance test 2-PT-62.1, Containment Air Lock Leakage Rate, which is performed every six months. The air lock was pressurized with air to 44.3 psig. The resulting leak rate was measured to be 7.8 standard cubic feet per hour with a maximum acceptance criteria of 125 cubic feet per hour. All gauges and flowmeters were checked for calibration. No problems were noted and the test was considered to have been performed satisfactorily.

On November 16, the inspector witnessed the performance of 1-PT-52.2A, Reactor Coolant System Leak Rate (Computer Calculation) revision 3 for Unit 1. The unidentified leak rate for Unit 1 had been increasing for several days prior to the performance of this test and had been measured as high as 0.6 gpm. As a result, several containment entries had been conducted in an attempt to identify the cause of the leak. The only leak of any significance was observed to be coming from the area of the "B" reactor coolant loop Tc RTD bypass line isolation valves. The operator could not get close enough to determine exactly which valve was leaking, however, the licensee suspected 1-RC-52 due to a packing leak that had been identified on the valve prior to the startup following the refueling outage and the valve is located in the same general area of the present leakage. The licensee also conducted several walkdowns of the auxiliary building and discovered a slight packing leak on charging system valve, 1-CH-MOV-1370. By using a calibrated container, the licensee was able to determine the leak out of the charging valve to be approximately 0.03 gpm. This leak rate was then treated as identified leakage and subtracted from the calculated unidentified leak rate via the computer. The licensee also placed the gas stripper in a vacuum, which put the PDTT in a slight vacuum making sure all the identified leakage was being accounted for. The leak rate was then calculated to be 0.46 gpm unidentified and 0.099 gpm identified, well within the TS acceptance criteria. No other problems were identified by the inspectors. The inspectors will continue to monitor the licensee's actions.

No violations or deviations were identified.

5. ESF System Walkdown (71710)

On November 15 and 16, the inspector performed a walkdown of the accessible portions of the chemical and volume control system associated with boric acid transfer. The operations valve checkoff procedure, 1-OP-8.3A and drawing, 11715-FM-95A sheets 1 through 4, were used. No significant problems were noted. The inspector did observe, however, that the vent valves associated with level transmitters 1-CH-T109, 1-CH-T114, 1-CH-T116, 1-CH-T118, and 1-CH-T120 were not shown on the drawings, but were listed in procedure 1-OP-8.3A and that the drain valves associated with the same level transmitters were not shown on either 1-OP-8.3A or the drawings. These observations and the need for consistency was discussed with the licensee.

No violations or deviations were identified.

6. Operational Safety Verification (71707)

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 inspectors verified compliance with selected TS requirements and LCOs.

In the course of the monthly activities, the resident inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital areas access controls, searching of personnel, packages and vehicles; badge issuance and retrieval; escorting of visitors; patrols; and compensatory posts. On a regular basis, RWPs were reviewed and the specific work activity was monitored to assure that the activities were being conducted per the RWPs.

The inspectors kept informed, on a daily basis, of overall status of both units and of any significant safety matter 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 inspectors 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 recorder readings, and annuciator alarms; and observing housekeeping.

On October 27, during a tour of the 1J EDG room, the inspector observed scaffolding installed near the the diesel above the governor and next the air start receivers. The inspector was unable to determine the purpose of the scaffolding, but based on the tag, (#L-10052), the scaffolding had been installed since October 24. Since there did not appear to be any work going on or a need for the scaffolding, the inspector asked the Shift Supervisor to look into the situation. On the following Monday, October 30, the inspector again toured the 1J EDG room to determine the status of the scaffolding and found it to still be installed. This time the inspector discussed the problem with the Operations Superintendent and was informed that he would have the Maintenance Superintendent remove the scaffolding. On October 31, the inspector observed the scaffolding to have been removed. The licensee was unable to determine just when the work, which involved replacement of room lights, had been completed. The inspector discussed with the licensee the need to minimize the time any foreign material such as scaffolding is placed near safety-related equipment even though it has been evaluated and approved for use. The licensee will be reviewing their scaffolding program to make sure the necessary controls are in place to remove scaffolding as soon as it is no longer needed and to ensure that its use around safety-related equipment is minimized.

On October 31, the inspectors attended the licensee's briefing describing the actions necessary to reduce TAVE on Unit 2 from 586.8 degrees F to 580.8 degrees F. TAVE was being lowered to help reduce further degradation of the Unit 2 S/G tubes due to primary stress corrosion cracking, which is temperature dependent. The briefing itself was not very detailed, but because of the numerous questions from the operations staff the material seemed to be fully covered. The inspectors also witnessed portions of the activities associated with the actual TAVE reduction and observed the operation to be controlled and well performed. The inspectors did not identify any problems associated with the evolution.

On November 9, 1989, the inspector was present in the control room when a low pressure instrument air alarm was received. A relief valve had lifted on the main air receiver in the turbine building and failed to reseat. The Unit 2 auxiliary building instrument air compressor was started and instrument air from the main air receiver to auxiliary building instrument air was isolated. The air compressor supplying the turbine building air receiver was secured and the air receiver pressure was reduced to approximately 50 psig before the relief valve reseated.

Following the alarm, the inspector entered the auxiliary building and observed that valve 1-SA-PCV-105 which supplies service air backup to the auxiliary building instrument air receivers was wide open. This has been identified as a problem in the past because the backup service air is not water or oil free (see NRC Inspection Report 338,339/88-36 regarding previous instrument air problems). The inspector also checked the auxiliary building instrument air compressor which had been started to backup the turbine building instrument air. In the past, this compressor has proven unreliable and usually failed due to high operating temperatures. The inspector noticed that a stack of muslin rags laying on the compressor head had started to smoke indicating that the compressor was beginning to overheat. The rags were removed from the compressor and the control room was notified.

Following the reseating of the relief valve, one of the turbine building compressors was started and turbine building instrument air was aligned to supply auxiliary building instrument air. The Unit 2 auxiliary building instrument air compressor was then secured and the service air backup supply valve 1-SA-PCV-105 automatically closed due to the increase in instrument air pressure. The licensee took several instrument air samples following the service air intrusion and informed the inspectors that they did not detect any oil or moisture contamination. The licensee is presently upgrading the instrument air system with a completion date for the end of the year, however based on the inspector's observations, this schedule appears to be optimistic.

No violations or deviations were identified.

7. Action on Previous Inspection Findings (92701, 92702)

(Closed) IFI 338/88-05-02, Request for additional information concerning removal of valve 1-CH-T122. The valve checkoff procedure has been revised to delete this valve from the procedure. However, the licensee has been unable to determine when the valve was removed from the system.

(Closed) IFI 338/88-05-03, Maintenance history on Unit 1 RTD bypass manifold isolation valves. The inspector was provided with the requested information and all of the inspectors questions were answered. No further information is needed regarding this IFI.

8. Exit Interview

The inspection scope and findings were summarized on November 17, 1989 with those persons indicated in paragraph 1. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

9. Acronyms and Initialisms

AP	Abnormal Procedure
AUX	Auxiliary
CAD	Computer Assisted Drawing
CAE	Condenser Air Ejector
CDA	Containment Depressurization Actuation
CRO	Control Room Operator
DCP	Design Change Package
DHR	Decay Heat Removal
DUR	Drawing Update Request
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EHC	Electro-Hydraulic Control
EP	Emergency Procedure
ESF	Engineered Safety Feature
EWR	Engineering Work Requests
F	Fahrenheit
GPM	Gallons Per Minute
HP	Health Physics
IFI	Inspector Follow-up Item
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LHSI	Low Head Safety Injection
MCC	Motor Control Center
MOV	Motor Operated Valve
MPC	Maximum Permissible Concentration

MREM	Millirem
MSSV	Main Steam Safety Valve
NRC	Nuclear Regulatory Commission
NSE	Nuclear Safety Engineering
PDTT	Primary Drain Transfer Tank
PES	Plant Engineering Services
PORV	Power Operated Relief Valve
PROM	Programmable Read Only Memory
PSIG	Pounds Per Square Inch Gauge
PTSS	Periodic Test Scheduling System
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RMS	Radiation Monitoring System
RSHX	Recirculation Spray Heat Exchanger
RTD	Resistance Temperature Detector
RWP	Radiation Work Permit
S/G	Steam Generator
SALP	Systematic Assessment of Licensee Performance
SI	Safety Injection
SNSOC	Station Nuclear Safety and Operating Committee
STA	Shift Technical Advisor
SW	Service Water
TAVE	Average Temperature of RCS
TS	Technical Specification
TSC	Technical Support Center
UE	Unusual Event
URI	Unresolved Item
UFSAR	Updated Final Safety Analysis Report
VCT	Volume Control Tank
VIMS	Visual Information Monitoring System
WOG	Westinghouse Owners Group