



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

Report Nos.: 50-338/93-05 and 50-339/93-05

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: January 11-15, 1993

Inspector:

*P. T. Burnett*  
P. T. Burnett

*2/5/93*  
Date Signed

Approved by:

*R. V. Crlenjak*  
R. V. Crlenjak, Chief  
Operational Programs Section  
Operations Branch  
Division of Reactor Safety

*2-5-93*  
Date Signed

### SUMMARY

#### Scope:

This routine, announced inspection addressed control of heavy loads in containment and crane inspections to be performed during the steam generator replacement project. Nuclear instrumentation system surveillance activities were also reviewed.

#### Results:

Implementation of the heavy loads program and recent inspections of the Unit 1 polar crane were satisfactory, but procedural guidance for contract crane inspectors could be improved (paragraph 2).

Special inspections for heavy lifts to be conducted during the steam generator replacement project have been scheduled at the appropriate times. However, the amount of time scheduled for the inspections was insufficient. The inspector questioned the safety of conducting inspections while the crane was in use for other activities (paragraph 3).

The nuclear instrumentation surveillances reviewed were conducted with acceptable periodicity and satisfactory results. The inspector questioned the benefits of increased surveillance of functions that appeared unvarying since this required extensive activity within the instrumentation racks. (paragraph 4).

No violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

R. Deane, Maintenance Engineer  
\*M. Gettler, Manager, Steam Generator Replacement Project  
\*G. Kane, Station Manager  
\*J. Leberstein, Licensing Engineer  
\*W. Matthews, Superintendent, Maintenance  
A. Parker, Supervisor, Maintenance Engineering  
P. Quarles, Supervisor, Quality Assurance  
\*B. Shives, Acting Assistant Station Manager, Nuclear Safety and Licensing  
\*J. Smith, Manager, Quality Assurance  
\*J. Stall, Acting Assistant Station Manager, Operations and Maintenance

Other licensee employees contacted during this inspection included engineers, security force members, technicians, and administrative personnel.

#### NRC Resident Inspectors

M. S. Lesser, Senior Resident Inspector  
\*D. R. Taylor Resident Inspector

\*Attended exit interview on January 15, 1993.

### 2. Control of Heavy Loads (61701, 37701)

The following completed procedures of the heavy loads program were reviewed:

- a. O-MPM-1301-01 (Revision 1), Polar Crane Inspection, was performed for the current Unit 1 outage during January 6-8, 1993. Excessive wear on the bridge brake shoes was identified, along with the failure of one bridge braking system to maintain hydraulic pressure. All other aspects of this mechanical inspection were satisfactory. The brake shoes were replaced before the crane was released for service. The initial release limited the crane to 50-ton loads pending repair of the hydraulic system. The SNSOC approved the restricted use of the crane on January 8, 1993. During the week of January 11, 1993, the hydraulic system repairs were completed, and the load restriction was removed.

The MPM procedure had only one set of tables for hook measurements for comparison with baseline values. It appeared that separate baseline tables would be required for each unit in that all four main hooks are different. However, the licensee's QA records indicated that Unit 1, hooks 1 and 2, are identical to Unit 2, hooks 1 and 2, respectively. Hooks 1 and 2 differed in baseline measurements. This is surprising, since the measurements are recorded to one-thousandths of an inch. In practice, all heavy loads are attached to the pin hole in the hook.

The base line dimension for all four hooks was a hole diameter of 5.515 inches, when measured both horizontally and vertically. The most recent inspection did not reveal any significant increase in diameter.

- b. O-EPM-0402-01 (Revision 0), Inspection and Testing of Polar Crane, was performed on January 7, 1993. All steps were completed with satisfactory results.

The two procedures discussed above satisfy the requirements of ANSI B30.2-1976. However, the licensee had an additional inspection performed by a vendor certified by the DOL to perform crane inspections required by 29 CFR 1910.179. The report issued by the contractor included a list of problems and a completed check list. The check list did not provide acceptance criteria for a component or function. Discussions with the two contractor employees, who performed the compliance inspection, revealed them to be experienced, knowledgeable, and competent. However, had detailed procedural guidance been provided them by the licensee, documentation of the inspection performed would have been improved and would have supported the licensee's adherence to commitments made in response to GL 81-07. In addition, performance of the licensee's procedures by such experienced personnel would have provided a superior review of those procedures.

- c. O-MPM-1304.1 (Revision 1), Inspection and Repair of Reactor Vessel Component and Reactor Coolant Pump Lifting Devices, was in progress during this inspection. Removal of the Unit 1 reactor vessel head was not scheduled until January 15, 1993.

### 3. Polar Crane Use During the Steam Generator Replacement Program (37701)

During SGRP, the Unit 1 polar crane will not be operated under the restrictions of GL 81-07 and NUREG-0612, Control of Heavy Loads in Nuclear Power Plants. Once all fuel is removed from containment and Unit 1 is isolated from any systems shared with Unit 2, load path restrictions will be removed, and the polar crane will be used for six over-rated-load lifts. The maximum load to be lifted during SGRP is calculated to be 262.5 tons. The nameplate rating of the bridge is 250 tons. The project has conformed to B30.2-1990 to justify the overload lift and has scheduled the inspections that B30.2-1990 requires before and after such lifts. These supplementary inspections will be limited to the bridge, which is the only portion of the crane that exceeds its design rating during the heavy lifts.

During an earlier inspection, the inspector noted that the required pre- and post-lift crane inspections had not been scheduled (IFI 50-338/92-25-01). The required bridge inspections are now scheduled and the job orders written and approved. For all but the first inspection, only 0.1 hr is allotted to the actual inspection activity. In response to the inspector's questions, project management stated that all necessary time would be devoted to the required inspections. One member of the project staff

speculated that the 0.1 hour was only the critical path time for stopping the crane to pick of the inspectors. This inspector expressed the concern that it is dangerous to try to perform inspections while the crane is in use for other purposes and not under the direct control of the persons performing the inspections. The licensee appeared to accept that concern.

#### 4. Calibration of Nuclear Instruments

The following surveillance procedures completed for Unit 2 were reviewed:

- a. 2-PT-24 (Revision 13), Calorimetric Heat Balance (Hand Calculation), was required only once in 1992 when the computer was out of service. The results were acceptable.
- b. 2-PT-24.1 (Revision 4), Calorimetric Heat Balance (Computer Calculation), was performed with the required daily frequency for the period selected for review, October 5 - 31, 1992. Acceptable results were obtained in all cases reviewed.
- c. 2-PT-27 (Revision 12), RCS Flow and Loop  $\Delta T$  Measurement, is required to be performed every 18 months and after maintenance. It was performed three times in 1992.

The RTD bypass loops are to be removed from Unit 1 during the current outage and from Unit 2 in the next outage. Direct immersion thermowells will be used instead. The inspector discussed with the licensee some of the problems encountered by other licensees following bypass loop removal. Hot leg streaming effects combined with the low leakage core has caused  $\Delta T$  to vary slowly throughout the cycle. Some licensees have found it necessary to determine the indicated full-power  $\Delta T$  quarterly rather than every 18 months. The uncertainties in measurement of RCS flow by equating primary side and secondary side heat balances have increased.

- d. 2-PT-30.2.1 (Revision 18), NIS Power Range Channel I (N-41) Channel Functional Test, does more than required for a functional test of the high flux trip setpoint. In addition, the low flux trip setpoint is checked even with the reactor operating above the setpoint with P10 active. Other functions checked include the P8 and P10 interlocks and the positive and negative rate trips.

The inspector reviewed a year of surveillance results. During that time, P8, P10, and the positive and negative rate trip setpoints did not change significantly and were well within the bands of acceptable values.

If only the high flux trip were checked, an additional current source would have to input to the channel, but no standard cabling would have to be disconnected. With the extended surveillance activities being performed, additional time is spent working in racks, with additional manipulation, disconnection, and reconnection of cables. The benefits

of the increased surveillance do not appear to justify the increased out of service time of the instrument channels or the risks attendant to increased activities within the instrument racks.

5. Followup of Previous Inspection Activities (92701)

(Closed) IFI 50-388/92-25-01: Inspections of the Unit 1 polar crane preceding and following overload lifts have not been scheduled, nor the inspection agency identified.

A contract for the inspections has been issued, and the inspections have been scheduled (see paragraph 3).

6. Exit Interview

The inspection scope and results were summarized on January 15, 1993, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed above. Proprietary information was not reviewed during this inspection. Dissenting comments were not received from the licensee.

7. Acronyms and Initialisms

ANSI	American National Standards Institute
DOL	U. S. Department of Labor
EPM	electrical preventive maintenance procedure
GL	generic letter issued by the NRC
IFI	inspector followup item
MPM	mechanical preventive maintenance procedure
NIS	nuclear instrumentation system
PT	periodic test
RCS	reactor coolant system
RTD	resistance temperature device
SGRP	steam generator replacement project
SNSOC	station nuclear safety and operating committee