UNITED STATES

NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 31, 2008

EA-08-036

Virginia Electric and Power Company
ATTN.: Mr. David A. Christian
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION - NRC INTEGRATED INSPECTION REPORT 05000338/2007005 AND 05000339/2007005 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Christian:

On December 31, 2007, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station, Units 1 and 2. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 22, 2008, with Mr. Daniel Stoddard and other members of your staff.

The inspections examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based upon the results of this inspection, one finding of very low safety significance (Green) was identified by the NRC and determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. In addition, two licensee-identified violations, which were determined to be of very low safety significance (Green), are listed in Section 4OA7 of this report. If you contest any non-cited violation in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the North Anna Power Station.

In addition, the inspectors reviewed the events associated with heavy load lifts and industry uncertainty regarding the licensing bases for handling of reactor vessel heads, which led to the issuance of EGM 07-006, "Enforcement Discretion for Heavy Load Handling Activities," on September 28, 2007. The Nuclear Energy Institute (NEI) has informed NRC of industry approval of a formal initiative that specifies actions each plant will take to ensure that heavy load lifts continue to be conducted safely and that plant licensing bases accurately reflect plant practices.

The inspection identified a violation of requirements to update the updated final safety analysis report pursuant to 10 CFR 50.71(e) to reflect aspects of heavy load lifts involving the reactor vessel head and include information from a reactor vessel head drop analysis. The NRC staff believes implementation of the initiative will resolve uncertainty in the licensing bases for heavy load handling, and enforcement discretion related to the uncertain aspects of the licensing basis is appropriate during the implementation of the initiative. Based on these facts, I have been authorized, after consultation with the Director, Office of Enforcement, to exercise enforcement discretion in accordance with Section VII.B.6 of the Enforcement Policy and refrain from issuing enforcement action for the violation.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at *http://www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

Sincerely,

/RA/

Eugene F. Guthrie, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Reports 05000338/2007005 and 05000339/2007005
w/Attachment: Supplementary Information

cc w/encl. (See next page)

load lifts continue to be conducted safely and that plant licensing bases accurately reflect plant practices.

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Report to D. A. Christian from Eugene F. Guthrie dated January 31, 2008.

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-338, 50-339
License Nos.:	NPF-4, NPF-7
Report Nos.:	05000338/2007005, 05000339/2007005
Licensee:	Virginia Electric and Power Company (VEPCO)
Facilities:	North Anna Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117
Dates:	October 1, 2007 - December 31, 2007
Inspectors:	J. Reece, Senior Resident Inspector R. Clagg, Resident Inspector E. Lea, Senior Operations Engineer, (Section 1R11) R. Taylor, Reactor Inspector, (Section 4OA5.1)
Approved by:	E. Guthrie, Chief, Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

CONTENTS

SUMMARY OF FINDINGS

IR 05000338/2007-005, IR 05000339/2007-005; 10/01/2007 - 12/31/2007; North Anna Power Station Units 1 & 2. Refueling and Outage Activities.

The report covered a three-month period of inspection by the resident inspectors, a senior operations engineer, and reactor inspector from the region. One Green, NRC-identified Finding was identified and determined to be a Non-cited Violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, “Significance Determination Process” (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process,” Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. A Green, non-cited violation of Title 10 Code of Federal Regulations Part 50, Appendix B, Criterion V, was identified by the NRC for failure to adequately accomplish a procedure for installation of the Unit 1 containment sump strainer modification. On October 11, 2007, the inspectors performed a walkdown of the containment sump strainer just prior to Mode 4 and identified openings or gaps between module ‘B9' and ‘B8’ which exceeded the allowable tolerance. The licensee had recently completed their operational readiness reviews of a modification to the sump strainer. The licensee’s inspection of other modules revealed only minor problems which were corrected. The problem is identified in the licensee’s corrective action program as condition report 022264.

The finding was more than minor due to the impact on the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the related attribute of human performance. The finding was of very low safety significance (Green) because the problem was identified while in Mode 5, the mode in which the safety function was not required. The cause of this finding is related to the aspect of procedural compliance of the work practices’ component in the cross-cutting area of human performance (H.4.b) because personnel failure to follow modification installation procedures. (Section 1R20)

B. Licensee-Identified Violations

Two violations of very low safety significance were identified by the licensee, and have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. The violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 was in a refueling outage at the beginning of the inspection period. On October 17, 2007, Unit 1 reached full Rated Thermal Power (RTP) and operated at or near full RTP for the remainder of the inspection period.

Unit 2 began the inspection period at full RTP, and operated at or near full RTP until an automatic reactor trip occurred on December 25, 2007, due to failure of a reactor coolant pump motor. The unit remained in a forced outage for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Seasonal Adverse Weather Preparations Reviews. The inspectors reviewed the licensee's seasonal adverse weather preparations for cold weather operations specified in 0-GOP-4.2, "Extreme Cold Weather Operations," and 0-GOP-4.2A, "Extreme Cold Weather Daily Checks," and the licensee's correction action data base for cold weather related issues. The inspectors walked down the three risk-significant areas listed below to verify compliance with the procedural requirements and to verify that the specified actions provided the necessary protection for the structures, systems, or components.

- Unit 1 & 2 Auxiliary Feedwater (motor and steam driven);
- Unit 1 & 2 Refueling Water Storage Tanks; and,
- Unit 1 & 2 Emergency Diesel Generator Rooms.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdowns

a. Inspection Scope

The inspectors conducted three equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, with the other train or system inoperable or out of service. The inspectors reviewed the functional system descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system. The operating procedures, drawings and other documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

- Unit 1 Low Head Safety Injection System per Procedure 1-OP-7.1A, "Valve Checkoff - Low head Safety Injection System," Revision 21, following a refueling outage;
- Unit 2 Main Control Room air conditioning system during maintenance on 2-HV-E-4B Chiller; and,
- Train B Service Water Heater during a service water header outage per Procedure 0-OP-49.1A "Valve Checkoff - Service Water," Revision 43.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 1 Quench Spray System outside of containment to properly assess alignment and to identify discrepancies that could impact its availability and functional capacity. The inspectors assessed the physical condition of the pumps, valves, pipe supports, and instrumentation. The inspection also included a review of the alignment and the condition of support systems including fire protection, room ventilation and emergency lighting. Equipment deficiency tags were reviewed and the condition of the system was discussed with engineering personnel. The operating procedures, drawings and other documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Drill

a. Inspection Scope

During an annual fire protection drill on November 15, 2007, the inspectors assessed the timeliness of the fire brigade in arriving at the scene, the fire fighting equipment brought to the scene, the donning of fire protective clothing, the effectiveness of communications, and the exercise of command and control by the scene leader. The inspectors also assessed the acceptance criteria for the drill objectives and reviewed the licensee's corrective action program for recent fire protection issues.

b. Findings

No findings of significance were identified.

.2 Fire Area Tours

a. Inspection Scope

The inspectors conducted tours of the fifteen areas listed below and important to reactor safety to verify the licensee's implementation of fire protection requirements as described in Virginia Power Administrative Procedure (VPAP)-2401, "Fire Protection Program." The inspectors evaluated, as appropriate, conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and (3) the fire barriers used to prevent fire damage or fire propagation. Other documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

- Emergency Diesel Generator 1H Unit 1 (fire zone 9A-1a / EDG-1H);
- Emergency Diesel Generator 2H Unit 2 (fire zone 9A-2a / EDG-2H);
- Emergency Diesel Generator 1J Unit 1 (fire zone 9B-1a / EDG-1J);
- Emergency Diesel Generator 2J Unit 2 (fire zone 9B-2a / EDG-2J):
- Service Water Pump House (fire zone 12a / SWPH);
- Safeguards Area Unit 1 (fire zone A-16-1 / SA-1);
- Containment Unit 1 (fire zone 1-1a / RC-1);
- Quench Spray Pump House and Safeguards Area Unit 1 (includes Z-16-1) (fire zone 15-1a / QSPH-1);
- Quench Spray Pump House and Safeguards Area Unit 2 (includes Z-16-2) (fire zone 15-2a / QSPH-2);
- Service Water Valve House (fire zone 48a / SWVH);
- Motor Generator Set House Unit 1 (fire zone Z-27-1 / MGSH-1);
- Motor Generator Set House Unit 2 (fire zone Z-27-2 / MGSH-2);
- Casing Cooling Tank & Pump House Unit 1 (fire zone Z-41-1 / CCT & PH-1);
- Casing Cooling Tank & Pump House Unit 2 (fire zone Z-41-2 / CCT & PH-2); and
- Containment Unit 2 (fire zone 1-2a / RC-2).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

External Flooding

a. Inspection Scope

The inspectors assessed the external flooding vulnerability of the North Anna site from the SW pond and Lake Anna. The inspectors verified the condition of the emergency flood protection dike between the SW pond and the plant and related drainage ditches and culverts in addition to the west side flood protection dike. The inspectors also reviewed applicable station procedures and design documents to assess proper surveillance and maintenance for external flood protection features. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Requalification Activities Review

a. Inspection Scope

The inspectors reviewed a crew examination which involved a loss of bearing cooling water which forced a manual reactor trip, and a reactor coolant system leak which led to a small break loss of coolant accident, equipment failures during a manual safety injection, and a loss of instrument air.

The scenario required classifications and notifications that were counted for NRC performance indicator input. The inspectors observed crew performance in terms of communications; ability to take timely and proper actions; prioritizing, interpreting, and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; and oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions. The inspectors observed the post training critique to determine that weaknesses or improvement areas revealed by the training were captured by the instructor and reviewed with the operators.

b. Findings

No findings of significance were identified.

.2 Biennial Review

a. Inspection Scope

Following the completion of the annual operating examination testing cycle which ended on February 9, 2007, the inspectors reviewed the overall pass/fail results of the individual JPM operating tests, and the simulator operating tests administered by the licensee during the operator licensing requalification cycle. These results were compared to the thresholds established in Inspection Manual Chapter (IMC) 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the two equipment issues listed below, the inspectors evaluated the licensee's effectiveness of the corresponding preventive and corrective maintenance. The inspectors performed walkdowns of the accessible portions of the systems, performed in-office reviews of procedures and evaluations, and held discussions with system engineers. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65) using VPAP 0815, "Maintenance Rule Program," and Engineering Transmittal CEP-97-0018, "North Anna Maintenance Rule Scoping and Performance Criteria Matrix." Other documents reviewed are listed in Attachment.

- Unit 1 charging pumps cross-tie status unavailability exceeded the performance goal, condition report (CR)024584;
- Replacement of lube oil supply tubing to governor gear drive for EDGs on Units 1 and 2, CR's 014715, 015350, 015424, and 015488;

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the five activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of 10 CFR 50.65 (a)(4) and the data output from the licensee's safety monitor associated with the risk profile of Units 1 and 2.

- Unit 1 Refueling Outage Plan Safety Review change due to emergent work to tagout "1H" EDG to support the inspection of a voltage regulator;
- Unit 1 Refueling Outage Plan Safety Review change due to emergent work to drain "C" RCS loop for"C" RCP seal work;
- Unit 1 Refueling Outage Plan Safety Review change due to emergent work involving "1H" EDG tagout to support relay replacement with "C" RCS loop drained;
- Unit 2 "Transient" component addition to risk evaluation due to an emergent condition involving loss of the primary power supply on Process Control Cabinet #8; and
- Units 1 and 2 entry into 0-AP-41, "Severe Weather Conditions," for expected high wind speed in parallel with control room chiller 2-HV-E-4B work, instrument rack work, switchyard activities, and chiller room missile door open.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two operability evaluations affecting risk-significant mitigating systems, listed below, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered as compensating measures; (4) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation and the risk significance in accordance with the SDP. The inspectors' review included a verification that the operability determinations were made as specified by Procedure VPAP-1408, "System Operability."

- CR022287, review of OD000125, "Address leakby of 5 gpm associated with 1-SI-MOV-1869A;" and
- CR017687, review of OD000117, "SSPS annunciator card failure did not adversely impact the safety function of the Solid State Protection System.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed five post maintenance test procedures and/or test activities, as appropriate, for selected risk-significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with licensee procedure VPAP-2003, "Post Maintenance Testing Program." Other documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

- Procedure 0-MCM-1107-01, "Removal and Installation of the Reactor Vessel Head or Gaskets and Retainer Clips ", Revision 19, per WO 0756078;

- Procedure 0-MCM-1110-02, “Reactor Coolant Pump Coupling Disassembly and Reassembly and Reactor Coolant Pump Motor Alignment,” Revision 20, per WO 00788529-01;
- “A” SW header expansion joint PMT during “A” header outage, per WO 00779221-01, MPM/1YR/00-SW-REJ external inspection and WO 00778751-01, MPM/2YR/00-SW-REJ internal inspection;
- Procedure 1-PT-214.12, “Valve Inservice Inspection (Service Water Valve Position Indication),” Revision 12, “A” SW header MOV PMT during “A” header outage, per WO 00487534-05; and,
- Procedure 1-PT-213.15, “Valve Inservice Inspection (MISC),” Revision 28, 01-DA-TV-100B PMT for SOV replacement and stem lubrication, per WO 00794739-01 and WO 00794739-03.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 1 Refueling Outage

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the Unit 1 refueling outage, conducted September 9, 2007 thru October 19, 2007, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The inspectors used Inspection Procedure 71111.20, “Refueling and Outage Activities,” to observe portions of the shutdown, cooldown, refueling, maintenance activities, and startup activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk plan and applicable TS. The inspectors monitored licensee controls over the outage activities listed below.

- Licensee configuration management, including daily outage reports, to evaluate defense-in-depth commensurate with the outage safety plan and compliance with the applicable TS when taking equipment out of service.
- Controls over the status and configuration of electrical systems and switchyard to ensure that TS and outage safety plan requirements were met.
- Licensee implementation of clearance activities to ensure equipment was appropriately configured to safely support the work or testing.
- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- Controls to ensure that outage work was not impacting the ability to operate the spent fuel pool cooling system during and after core offload.
- Reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.
- Reactivity controls to verify compliance with TS and that activities which could affect reactivity were reviewed for proper control within the outage risk plan.

- Refueling activities for compliance with TS, to verify proper tracking of fuel assemblies from the spent fuel pool to the core, and to verify foreign material exclusion was maintained.
- Containment closure activities, including a detailed containment walkdown prior to startup, to verify no evidence of leakage and that debris had not been left which could affect the performance of the containment sump.
- Heatup and startup activities to verify that TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant conditions. Reactor Coolant System (RCS) integrity was verified by reviewing RCS leakage calculations and containment integrity was verified by reviewing the status of containment penetrations and containment isolation valves.

b. Findings

Failure to Adequately Accomplish Procedure for Installation of Containment Sump Strainer Modification

Introduction: A non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, was identified by the inspectors for a failure to adequately accomplish a procedure associated with the installation of the Unit 1 containment sump strainer modification.

Description: On October 11, 2007, with Unit 1 in Mode 5 and just prior to entering Mode 4, the inspectors performed a walkdown inside containment. During the walkdown, the inspectors identified openings or gaps between containment sump screen module ‘B9' and ‘B8' which exceeded the allowable limit of .03 inches. The gaps were located on both vertical sides of the module, extended most of the length of the vertical side and were at least .0625 inches wide. These gaps had the potential to allow material much larger in length to pass through the screen holes. At the time of the inspection, the licensee had completed an operational readiness review and declared the newly installed containment sump strainer operable. The licensee had no further plans to perform modification inspections. The inspectors reviewed general maintenance procedure GMP-M-150, “Fabrication and Installation of Safety Related/Seismic Supports and Structures and Non-Safety Related Pipe/Tube/Instrument Supports,” of which step 6.3.1 states, “Fabricate and install new or modified supports or structures per the approved DCP drawings or sketches, applicable Specification Support sketches and this procedure. Document fabrication and installation on Attachment 4.” The inspectors concluded that the licensee failed to comply with the gap limit of .03 inches specified in Attachment 4. In accordance with Technical Specifications, the containment sump was not required to be operable in Modes 5 and 6. The licensee’s inspection of other modules revealed only minor problems which were corrected.

Analysis: The inspectors determined that the failure to adequately accomplish a procedure as required by 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” constituted a performance deficiency which impacted the operability of the containment sump strainer. In accordance with IMC 0612, the inspectors determined that the finding was more than minor due to the impact on the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and the related attribute of human performance. The inspectors evaluated this finding using IMC 0609, Appendix A and determined that it was of very low safety significance (Green) because the safety function was not required in Modes 5 and 6. Therefore it did not result in a loss of operability due to a design or qualification deficiency, did not represent an actual loss of safety function, did not result in a train being out of service longer than allowed by TS, and was not potentially risk significant due to possible external events.

The cause of this finding is related to the aspect of procedural compliance of the work practices' component in the cross-cutting area of human performance (H.4.b) because personnel failure to follow modification installation procedures.

Enforcement: 10 CFR 50, Appendix B, Criterion V, requires in part that activities affecting quality shall be accomplished in accordance with procedures. Contrary to this, on October 11, 2007, step 6.3.1 of procedure GMP-M-150 was identified to have not been adequately accomplished in that the licensee failed to ensure strainer module B9/B8 flange gap was adjusted to less than .03 inches which impacted the operability of the containment sump strainer. This finding is of very low safety significance or Green, is in the licensee's corrective action program as CR022264, and is characterized as a NCV, consistent with Section VI.A of the NRC's Enforcement Policy: NCV 05000338/2007005-01, Failure to Adequately Accomplish a Procedure for Installation of Containment Sump Modification.

.2 Control of Heavy Loads

a. Inspection Scope

In response to operational experience concerns regarding reactor vessel head lifts (NRC Operating Experience Smart Sample FY2007-03), the inspectors reviewed Dominion's programs and procedures to determine whether past and current practices were within the licensing basis, and consistent with guidance in NUREG-0612, "Control of Heavy loads at Nuclear Power Plants," and the Nuclear Energy Institute's (NEI) formal initiative to ensure that heavy load lifts were conducted safely. The inspectors reviewed Dominion's actions to manage the increased risk during these activities and observed the heavy load lifts for the Unit 1 reactor vessel head removal and reinstallation. The inspectors also reviewed the procedures for the heavy load lifts involving the 'B' reactor coolant pump motor. The inspectors reviewed the documents listed in the Attachment of this report related to heavy load lifts and conducted discussions with licensee personnel.

b. Findings

The inspectors identified that the licensee failed to incorporate a heavy load lift analysis into their UFSAR. Failure to update the UFSAR to reflect aspects of heavy load lifts involving the reactor vessel head and include information from a reactor vessel head drop analysis was a violation of 10 CFR 50.71(e).

The NRC has found industry uncertainty regarding the licensing bases for handling of reactor vessel heads, and as a result issued EGM 07-006, "Enforcement Discretion for

Heavy Load Handling Activities," on September 28, 2007. The Nuclear Energy Institute (NEI) has informed NRC of industry approval of a formal initiative that specifies actions each plant will take to ensure that heavy load lifts continue to be conducted safely and that plant licensing bases accurately reflect plant practices. The NRC staff believes implementation of the initiative will resolve uncertainty in the licensing bases for heavy load handling, and enforcement discretion related to the uncertain aspects of the licensing basis is appropriate during the implementation of the initiative.

During inspection of heavy load lifts, the inspectors determined that the licensee implemented interim actions prior to the specified lifts in accordance with the industry initiative, thereby meeting the following criteria to warrant enforcement discretion:

1) The licensee did not have either a single-failure-proof crane nor a load drop analysis (generic or plant-specific) that bounded the planned lifts with respect to load weight, load height, and medium present, so the licensee conducted the head lift at the minimum practicable height and flooded the refueling cavity with water during the head movement to limit the maximum potential impact velocity of the head. The licensee maintained the bottom of the head less than 15 feet above the refueling cavity water surface when the head was lifted above the guide studs, so that the energy that could be transferred to the reactor vessel in the event of a load drop. Once the cavity was fully flooded [greater than 23 feet above the reactor vessel flange], the reactor vessel head was allowed to be lifted more than 15 feet above the water surface as necessary to lift the head above immovable structures around the refueling cavity.

2) Included the movement of heavy loads as a configuration management activity in administrative controls established to implement 10 CFR50.65(a)(4).

Therefore, consistent with EGM 07-006, we are exercising enforcement discretion for the above violation in accordance with Section VII.B.6 of the NRC Enforcement Policy and are not issuing enforcement action for the violation (EA-08-036).

.3 <u>Unit 2 Forced Outage Due to 'B' Reactor Coolant Pump Motor Trip</u>

a. <u>Inspection Scope</u>

Unit 2 began an unscheduled outage on December 25, 2007, due to a trip of the 'B' reactor coolant pump motor. During the forced outage period, the inspectors used Inspection Procedure 71111.20, "Refueling and Outage Activities," to observe portions of the cooldown, maintenance and startup activities to verify that the licensee maintained defence-in-depth commensurate with outage risk assessments and applicable TS. The inspectors monitored licensee controls over the outage activities listed below.

- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- Reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests listed below, the inspectors examined the test procedures, witnessed testing, and reviewed test records and data packages, to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable, and that the surveillance requirements of the TS were met. The inspectors also determined whether the testing effectively demonstrated that the systems or components were operationally ready and capable of performing their intended safety functions. The inspectors reviewed one containment isolation valve activity during the Unit 1 refueling outage cycle as part of the surveillance activities. Documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

The surveillance tests reviewed were:

RCS Leakage Detection

- 2-PT-52.2, “Reactor Coolant System Leak Rate (Computer Calculation),” Revision 34

In-Service Testing

- 1-PT-212.14, “Valve Inservice Inspection (Backup Air Supply for Aux Feedwater Valves),” Revision 9

Other Surveillance Tests

- 0-PT-77.15A, “ECCS PREACS Flow Test - Train A Filter,” Revision 14, completed on October 9, 2007, and
- 1-PT-14.2, “Charging Pump 1-CM-P-1B,” Revision 46

Containment Integrity Support System (Containment Isolation Valves)

- 1-PT-61.3, “Containment Type C Test,” Revision 26, CR019499

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed temporary plant modification 1788, “Supply Damper for 1-HV-F-17, install a cap on the 1A line and block the damper open,” to verify that the modification did not affect system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the installation of the temporary modification was in accordance with the work package, that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed activities associated with one licensee simulator based training and one emergency planning exercise drill both of which included evaluations of licensed operator event classification. Results of the training are used by the licensee as inputs into the Drill/Exercise Performance and Emergency Response Organization Drill Participation Performance Indicators. The drill/training simulations observed were:

- On November 7, 2007, the inspectors reviewed and observed the performance of an emergency planning exercise drill that involved an RCS leak with manual reactor trip inserted, followed by fuel damage (loose parts), a loss of a motor driven auxiliary feedwater pump, a loss of 1J emergency bus, a small break loss of coolant accident, a loss of 1J EDG, and a loss of ECCS flow, which required a General Emergency to be declared.

- On December 11, 2007, the inspectors reviewed and observed the performance of a simulator requalification training scenario that involved a stuck open SG PORV, a pressurizer level channel failure, an EHC leak requiring a manual reactor trip, subsequent ATWS, and a LOCA outside containment which resulted in the declaration of a Site Area Emergency.

The inspectors assessed emergency procedure usage, emergency plan classification, notifications, and the licensee’s identification and entrance of any problems into their corrective action program. This inspection evaluated the adequacy of the licensee’s conduct of the drill and critique performance. Exercise issues were captured by the licensee in their corrective action program as CR024357. Requalification training deficiencies were captured within the operator training program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4AO1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled the licensee's data submitted for the Units 1 and 2 Safety System Functional Failures PI for the period January, 2005, through September, 2007. Procedural guidance for reporting PI information and records used by the licensee to identify potential PI occurrences were also reviewed for both units. The inspectors reviewed licensee event reports, corrective action program documents, and maintenance rule records as part of the verification process. The inspection was conducted in accordance with NRC Inspection Procedure 71151, "Performance Indicator Verification." The applicable planning standards, 10 CFR 50.0 and NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," were used as reference criteria.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing daily Condition Report summary reports and periodically attending daily Plant Issue Review Team meetings.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, the inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment and corrective maintenance issues but also considered the results of daily inspector corrective action program item screening. The review also included issues documented outside the normal correction action program in system health reports, corrective maintenance works orders, component status reports, site monthly meeting reports and maintenance rule assessments. The inspectors' review nominally considered the six-month period of June 1, 2007 through December 1, 2007. The inspectors' compared and contrasted their results with the results contained in the licensee's latest integrated quarterly assessment report. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

b. Assessments and Observations

No findings of significance were identified. In general, the licensee has identified trends and has appropriately addressed the trends with their CAP. However, the inspectors identified an adverse trend in heat trace control cards. Specifically, the inspectors identified the following CR's involving repeated problems with various heat trace problems.

- CR024321, Control card fails to cycle heat trace off
- CR024396, Control card out of specification
- CR024885, Control card not turning off within 10 degrees
- CR025799, Control card defective
- CR025986, Control card set point found out of specification

The inspectors informed the licensee of the adverse trend for which CR026391 was initiated.

The inspectors also noted continued 7300 Process System Card failures and verified that the licensee had appropriately captured the trend in a previous program corrective action. The licensee has established a corrective action to prevent recurrence, CAPR000104, in which the licensee develops a strategy for an appropriate replacement frequency based on the respective card's failure impact on the unit. The inspectors continue to monitor the licensee's corrective actions for control cards.

.3 Annual Sample Reviews

CR018923, Unit 2 Safeguards Bypass Dampers Failed 0-PT-77.14B

a. Inspection Scope

The inspectors reviewed the licensee's assessments and corrective actions for CR018923, "Unit 2 safeguards bypass dampers failed 0-PT-77.14B." The condition report was reviewed to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the condition report against the requirements of the licensee's corrective action program as specified in VPAP-1601, "Corrective Action Program," VPAP-1501, "Deviations," and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the Attachment to this report.

b. Findings and Observations

On August 29, 2007, Unit 2 entered Technical Specification (TS) 3.0.3 after air operated dampers 2-HV-AOD-228-1 and 2-HV-AOD-228-2 were found to have leak-by during the performance of 0-PT-77.14B, "ECCS PREACS Train B Filter In-Place Test

(1-HV-FL-3B)." The leak rate was determined to be 6%, which was in excess of the established acceptance criteria, and thus rendered both trains of Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS) inoperable. In response to this event, the licensee performed a root cause evaluation (RCE) which determined that inadequate and untimely completion of corrective actions were a contributing cause for the inoperability of both trains of ECCS PREACS. The inspectors reviewed the licensee's evaluation and independently verified the following corrective action documents through a review of the licensee's corrective action program.

The inspectors reviewed Plant Issue N-2006-0504, investigation of as found leakage for the Unit 2 Safeguards exhaust bypass dampers exceeded the acceptance criteria of 0-PT-77.14B, and initiated on February 6, 2006. The respective RCE assigned a corrective action to identify improvements to 0-PT-77.14B and the related train A procedure, 0-PT-77.14A, "ECCS PREACS Train A Filter In-Place Test (1-HV-FL-3A)," that would address actions required should excessive PREACS filter bypass leakage be discovered. Although this corrective action was originally due on September 21, 2006, with a subsequent extension to November 16, 2007, it was not completed prior to Unit 2 entering TS 3.0.3 on February 27, 2007, when PREACS filter bypass leakage was found to be excessive during the performance of 0-PT-77.14A. The inspectors reviewed the associated CR008099, "2-HV-AOD-228-1 and 2-HV-AOD-228-2 leakby," and noted that the respective RCE identified that corrective actions stemming from Plant Issue N-2006-0504 were ineffective. Although the root cause evaluation acknowledged the role that failure to complete corrective actions associated with Plant Issue N-2006-0504 played in Unit 2 having to enter TS 3.0.3 on February 27, 2007, it failed to ensure that these actions were subsequently completed in a timely manner. Inspection Report 05000338, 339/2007003 documented a LIV for this performance deficiency.

The inspectors reviewed CR018923, "Unit 2 Safeguards Bypass Dampers failed 0-PT-77.14B," which was initiated for the August 29, 2007, PREACS TS 3.0.3 event. The respective RCE identified that the dampers and limit switches were not designed for current leakage requirements as the root cause. The inspectors noted that this issue was not identified by the licensee during previous evaluations. Corrective actions were assigned to replace existing PREACS dampers. This evaluation also identified that inadequate and untimely corrective actions connected to Plant Issue N-2006-0504 and CR008099 were a contributing cause. Corrective actions were assigned to consider inclusion of lessons learned in applicable training programs.

Given the above information the inspectors concluded that failure to aggressively pursue corrective actions contributed to repeat entries into TS 3.0.3. Additionally, the inspectors determined that the licensee failed to review the PREACS event, documented by Plant Issue N-2006-0504, as a Safety System Functional Failure under the Performance Indicator program; the licensee initiated CR026891 for review and corrective action. The inspectors discussed with the licensee whether a licensee event report was required by 10 CFR 50.73(a)(2)(vii)(A). The licensee initiated CR028677 to review this question. The enforcement aspects related to corrective action are discussed in section 4OA7. The residents continue to monitor the licensee's corrective action for this problem.

.4 Review of Operator Workarounds

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for operator workarounds (OWAs). The inspectors reviewed the cumulative effects of the licensee's OWAs and procedure 0-GOP-5.3, "Review of Operator Work Around." The inspectors reviewed the data package associated with this procedure which included an evaluation of the cumulative effects of the OWAs on the operator's ability to safely operate the plant and effectively respond to abnormal and emergency plant conditions. The inspectors reviewed and monitored licensee planned and completed corrective actions to address underlying equipment issues causing the OWAs. The inspectors also evaluated OWAs against the requirements of the licensee's corrective action program as specified in VPAP-1601, "Corrective Action Program," VPAP-1501, "Deviations," and 10 CFR 50, Appendix B. OWAs were additionally reviewed in the aggregate on a periodic basis as required by VPAP-1401, "Conduct of Operations."

b. Findings and Observations

No findings of significance were identified. In general, the inspectors verified that the licensee has identified operator workaround problems at an appropriate threshold and entered them in the corrective action program, and has proposed or implemented appropriate corrective actions. The inspectors noted 21 OWAs specified with outstanding corrective actions out of a total 27 OWAs. Specifically, OWA-487, "Unit 2 Cable Vault and Tunnel CO2 Fire Suppression," was reviewed in detail. The inspectors noted that the licensee had initiated corrective actions for an overpressurization issue associated with this fire suppression system. This issue was previously documented in IR 005000338, 339/2005008 as unresolved item URI 05000339/2005008-02, "Potential for Over-pressurization of the Unit 2 Cable Vault and Tunnel Upon Discharge of the Carbon Dioxide System."

4OA3 Event Followup 71153

.1 Unit 2 Automatic Reactor Trip Due to 'B' RCP Motor Trip

a. Inspection Scope

The inspectors responded to a Unit 2 automatic reactor trip on December 25, 2007. The inspectors discussed the trip with operations, engineering, and licensee management personnel to gain an understanding of the event and assess followup actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors reviewed the licensee's root cause evaluation and assessed the team's actions to gather, review, and assess information leading up to and following the trip. The licensee's investigation identified that the cause of the trip was failure of the 'B' reactor coolant pump motor. The inspectors also reviewed the initial licensee notifications to verify that the requirements specified in NUREG-1022, Event Reporting Guidelines were met.

b. Findings and Observations

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000339/2007-002-00: Voluntary LER - Feedwater Flow Venturi Calibration Delta From Installed Flow Discharge Coefficients

During the Unit 1 September, 2007, refueling outage the main feedwater flow venturis were removed and sent to a vendor lab for calibration. The average flow coefficient was .758% higher than the average of the coefficients previously used and resulted in a reduction in generated power output. The licensee determined that the change is bounded by the uncertainty analysis and that no accident analysis limits for Unit 1 were exceeded. The licensee documented this issue in their corrective action program as CR020893. This LER is closed.

4OA5 Other Activities

.1 (Open) Temporary Instruction (TI) 2515/166 "Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 204-002) - Unit 1"

a. Inspection Scope

The inspectors reviewed Unit 1 implementation of the licensee's commitments documented in their September 1, 2005, response to Generic Letter (GL) 2004-002, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," including:

- Containment Sump Strainer Design Modification;
- Piping Insulation Modification;
- Containment Sump Strainer Interferences Modification; and,
- Incore Sump Room Drain Modification.

The inspectors reviewed the corresponding Modifications Packages (PC/Ms), and their corresponding 10 CFR 50.59 evaluations. The inspectors conducted a visual walkdown to verify the installed strainer assembly configuration and that insulation replacements were consistent with drawings and specifications provided in the modifications packages. Documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

The inspectors determined the following answers to the Reporting Requirements detailed in TI 2515/166-05, issued May 16, 2007:

05.a Dominion implemented plant modifications and procedure changes at NorthAnna committed to in their GL 2004-02 response for Unit 1. Dominion's final response to GL 2004-002 will address the outstanding commitments for: (1) justification for Time Dependent Head Loss assumptions; (2) temperature scaling for Head Loss Data; (3) justification for 5D ZOI for Qualified Coatings in containment; (4) evaluation of chemical effects; and, (5) downstream effects evaluation.

05.b Dominion updated the North Anna Unit 1 licensing bases to reflect the corrective actions taken in response to GL 2004-002.

05.c By letter dated November 15, 2007, the licensee requested an extension to complete the downstream and chemical effects analyses. On December 13, 2007, the NRC approved an extension until May 31, 2008.

TI 2515/166 will remain open pending inspection of the downstream and chemical effects analyses necessary to validate the design.

.2 (Closed) URI 05000338, 339/2006005-04, RCP Thermal Barrier CC Isolation Valve Evaluation

a. Inspection Scope

This inspection followed up on URI 05000338, 339/2006005-04, which had been opened for NRC review and evaluation of the circumstances involving reactor coolant pump (RCP) Thermal Barrier Isolation valves and related relief valves associated with the component cooling (CC) system.

b. Findings

The specific details of the URI are discussed in integrated inspection report 05000338, 339/2006005 and are not repeated in this report. The enforcement aspects relating to the inadequate RCP thermal barrier CC isolation valve actuators are discussed in section 4OA7 of the report.

During the review of related evaluations, the inspectors identified two discrepancies with the licensee's evaluations. These involved use of the piping design pressure in lieu of the pressure at the relief valve and a lower than expected RCP thermal barrier CC relief valve capacity. Using the proper pressure and capacity, a subsequent evaluation determined that the consequences of a RCP thermal barrier tube rupture remained bounded by the design basis accidents as listed in the UFSAR. The licensee initiated CR009157 for these discrepancies.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 22, 2008, the resident inspectors presented the inspection results for the routine integrated quarterly report to Mr. Dan Stoddard and other members of the staff. The licensee acknowledged the findings. Although proprietary information was reviewed during the inspection, no proprietary information is included in this report.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” requires in part that for significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to this, on August 29, 2007, the licensee identified that both trains of PREACS were inoperable due to in part inadequate corrective actions from a similar event on February 27, 2007. The finding is identified in the licensee’s corrective action program as CR018923. The finding is of very low safety significance because it only represented a degradation of a radiological barrier function provided for the control room.

- 10 CFR 50, Appendix B, Criterion VII, “Control of Purchased material, Equipment, and Services,” requires in part that measures shall be established to assure that purchased equipment conform to the procurement documents. Contrary to this, on June 28, 2006, the licensee identified that the pneumatic actuators for the Units 1 and 2 RCP thermal barrier CC outlet trip valves were not sized for a design differential pressure of 2455 psid. The finding is identified in the licensee’s corrective action program as Plant Issue N-2006-3515. The finding is of low safety significance because of the very low risk of a thermal barrier tube rupture, the ability of the CC containment isolation valves to isolate a thermal barrier tube rupture and the consequences of a RCP thermal barrier tube rupture remained bounded by the design basis accidents as listed in the UFSAR.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

W. Anthes, Project Manager
V. Armentrout, SG Programs, ISI Corporate
J. Breeden, Supervisor, Radioactive Analysis and Material Control
W. Corbin, Director, Nuclear Engineering
R. Evans, Manager, Radiological Protection and Chemistry
R. Foster, Supply Chain Manager
A. Higgons, Project Engineer
S. Hughes, Manager, Nuclear Operations
P. Kemp, Supervisor, Station Licensing
J. Kirkpatrick, Manager, Nuclear Maintenance
L. Lane, Plant Manager
G. Lear, Manager, Organizational Effectiveness
J. Leberstien, Technical Consultant - Licensing
T. Maddy, Manager, Nuclear Protection Services
M. Main, Component Engineer
G. Marshall, Manager, Nuclear Outage and Planning
C. McClain, Manager, Nuclear Training
F. Mladen, Manager, Nuclear Site Services
B. Morrison, Supervisor, Nuclear Engineering
J. Rayman, Nuclear Emergency Preparedness
M. Sartain, Director, Nuclear Safety and Licensing
J. Scott, Supervisor, Nuclear Training (operations)
D. Stoddard, Site Vice President
M. Whalen, Licensing
R. Williams, Component Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed		
05000338/2007005-01	NCV	Failure to Adequately Implement Procedure for Installation of Containment Sump Modification (Section 1R20)
Closed		
05000338/2007-002-00	LER	Voluntary LER - Feedwater Flow Venturi Calibration Delta From Installed Flow Discharge Coefficients (Section 4OA3.2)
05000338, 339/2006005-04	URI	RCP Thermal Barrier CC Isolation Valve Evaluation (Section 4OA5.2)
Discussed		
T2515/166	TI	Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-002) (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

<u>Section 1R04: Equipment Alignment</u>

<u>Partial Walkdowns</u>

- Procedure 1-OP-7.1A ,"Valve Check off - Low Head Safety Injection System," Revision 21
- Drawing 11715-WMKS-0101D-1, "Inservice Inspection Isometric RS SYS: RS-P-2A Discharge to PEN 71 North Anna Power Station Unit 1 Virginia Power," Revision 3
- Drawing 11715-WKS-0101D-2, "Inservice Inspection Isometric RS SYS: RS-P-2B Discharge to PEN 71 North Anna Power Station Unit 1 Virginia Power"
- Procedure 0-OP-49.1A, "Valve Checkoff - Service Water," Revision 43

<u>Complete Walkdowns</u>

- Procedure 2-OP-7.4A, "Valve Checkoff- Quench Spray System," Revision 9
- CR010720, House keeping in U-2 Quench Spray Pumphouse, 4/16/2007
- Work Order WO 00774703 for 2-QS-MOV-200B Valve Operator maintenance
- Work Order WO 00765056 for 2-QS-MOV-200A Valve Operator maintenance
- Work Order WO 00769035 for 2-QS-MOV-201A Valve maintenance
- Drawing 12050-ECI-107D, "Yard Piping – North Quench Spray M.S. Valve House and Safe Guard Area Unit 2," Revision 0
- Drawing 12050-ECI-107J, "Yard Piping – North Reactor Containment Unit 2," Revision 1

<u>Section 1R05: Fire Protection</u>

- VPAP-2401, "Fire Protection Program", Revision 27
- Procedure 1-FS-SW-1, "Service Water Pump House Units 1 & 2", Revision 1
- Procedure 1-DS-SWVH-1, "Service Water Valve House", Revision 0
- Procedure 1-FS-QS-1, "Quench Spray Building 274' (SG-74)", Revision 4
- Procedure 1-FS-SG-1, "Safeguards Area", Revision 4
- Procedure 2-FS-QS-1, "Quench Spray Building 274' (SG-74)", Revision 3
- Procedure 2-FS-SG-1, "Safeguards Area", Revision 3
- Procedure 1-FS-DR-1, "Diesel Rooms – 1J & 2J and 1H & 2H, Unit 1 and 2, Elev. 271", Revision 2

<u>Section 1R06: Flood Protection</u>

- UFSAR Section 3.8.6, "3.8.6 Flood Protection Dike"
- UFSAR Section 2.4.2, "Floods"
- UFSAR Section 2.4.3, "Probable Maximum Flood on Streams and Rivers"
- UFSAR Section 2.4.10, "Flood Protection Requirements"
- 1-PT-9.3, "Erosion Control Inspection - Station Site;" annual frequency and completed on January 17, 2007
- 0-EPM-2303-05, "Inspection of Flood Protection Dike Cathodic Protection;" new procedure not yet performed
- CR028704, NRC questions lack of UFSAR documentation for seismic induced lake seiche

Section 1R12: Maintenance Effectiveness

- CR024584, unavailability hours exceeded for the charging cross-tie for Unit 1
- A1E000029, A1 Eval Eng (LaPrade) U1 charging pump crosstie exceeding unavailability hours
- Plant Issue N-1989-0072, IN89-07, Small bore tubing failures on EDG's
- CR014715, During inspections of diesel, found tubing sheared on 1-EE-EG-1H
- CR015350, found lube oil supply tubing to governor drive broken on 2-EE-EG-2J
- CR015424, found lube oil supply tubing to governor drive broken on 2-EE-EG-2H
- CR015488, found lube oil supply tubing to governor drive broken on 1-EE-EG-1J
- Work Order WO 00781018-01, replace oil supply tubing to governor
- Work Order WO 00781020-01, replace oil supply tubing to governor

Section 1R19: Post Maintenance Testing

- Procedure 0-MCM-1107-01, "Removal and Installation of the Reactor Vessel Head O-Ring Gaskets and Retainer Clips," Revision 19 and 20
- CR021274, Received Rx Vessel Head flange leakoff HI Temp Alarm
- ACE000775, ACE to MAINT: received Rx vessel flange leakoff HI temp alarm, Revision 0
- CR021781, unexpected seal leakoff from 1-RC-P-1C during RCS pressurization
- Work Order WO 00756078, Disassemble Reactor Vessel/Repair Head Leak
- CR026346, 1-SW-MOV-115A motor current greater than 10% above nameplate during MOV testing
- CR026152, seat ring gasket found damaged on 1-SW-MOV-115A
- CR026347, during testing on 1-SW-MOV-115A the test plan maximum torque limit was exceeded
- CR025819, MOV: running current in excess of motor nameplate - 1-SW-MOV-115A
- Work Order WO 00487534-05, Replace Valve Seat Ring
- Procedure 0-MCM-0404-01, "Disassembly, Repair and Reassembly of Allis-Chalmers/Rodney Hunt Butterfly Valves," Revision 14
- Procedure 0-PT-213.19, "Valve Inservice Inspection (Auxiliary Service Water)," Revision 8
- Procedure 0-PT-213.15, "Valve Inservice Inspection (MISC)," Revision 28 and 28-P1
- Procedure 0-ECM-1509-01, "Quiklook MOV Testing," Revision 11
- Procedure 1-PT-214.12, "Valve Inservice Inspection (Service Water Valve Position Indication)," Revision 12
- Work Order WO 00794739-01 Replace SOV
- Work Order WO 00794739-03, Lubricate Valve Stem
- CR026513, 1-DA-TV-100B failed stroke time during 1-PT-213.15
- Procedure 0-ECM-2101-01, "Testing and Replacing EQ-Related ASCO Solenoid-Operated Valves," Revision 9
- Work Order WO 00779221-01, MPM/1YR/00-SW-REJ External Inspection
- Work Order WO 00778751-01, MPM/2YR/00-SW-REJ Internal Inspection
- VPAP-3001, "Safety and Regulatory Reviews". Revision 14, Attachment 3, "Safety Review"

- DNAP-3004, “Dominion Program for 10 CFR 50.59 and 10 CFR 72.48 - Changes, Tests, and Experiments,” Revision 1, Attachment 4, “50.59/72.48 Screen”
- Calc-59-01-213-15-18, “Valve Inservice Inspection - Stroke Time Acceptance Criteria”

Section 1R20: Refueling and Outage Activities

- 59-H800-00001 (Vendor Tech Manual) Harnischfeger Crane SN: C-23860-61
- 0-MPM-1301-01, Rev 13, “Frequent and Periodic Inspections of 1-MH-CRN-1 and 2-MH-CRN-1"
- 0-MPM-1301-03, Rev 0, “Gear Case Lubricant Changeout for 1-MH-CRN-1 and 2-MH-CRN-1"
- 0-MPM-1304-01, Rev 11, “Inspection and Repair of Refueling Lifting Devices”
- 0-MCM-1303-01, Rev 13, “Moving Miscellaneous Heavy Loads and Concrete Floor Plugs in Containment During Unit Outage”
- 0-MCM-1110-01, Rev 36, “Removal of the Reactor Vessel Head”
- 0-EPM-0402-01, Rev 8, “Inspection and Testing of Polar Crane”
- VPAP-0809, Rev 8, “NUREG-0612 Heavy Load Program”
- VPAP-0810, Rev 16, “Crane and Hoist Program”
- VPAP-2805, Rev 9, “Shutdown Risk Program”
- Technical Report No. CE-0041, Rev 1, “Station Procedure Changes to Comply with NUREG-0612 for Control of Heavy Loads”
- UFSAR Section 9.6, “Control of Heavy Loads”
- WCAP-9198, “Reactor Vessel Head Drop Analyses” (Proprietary)
- Various correspondence between VEPCO and NRC regarding NUREG-0612 and internal memoranda
- List of qualified crane operators
- WO 00782365-01, Perform reactor vessel head lifting device inspection
- WO 00744557-01, Perform pre-outage mechanical inspection of the polar crane
- WO 00744558-01, Perform pre-outage electrical inspection of the polar crane

Section 4OA2: Problem Identification and Resolution

- CR008218, 0-PT-77.14B was performed with unsat test results on 3/1/2207
- ACE000321, ACE to Operations for TS 3.0.3 not entered during 0-PT-77.14B on 2/6/2006
- CR008099, 2-HV-AOD-228-1 and 2-HV-AOD-228-2 leakby 2/27/2007
- RCE000030, RCE to Organizational Effectiveness
- CR018923, Unit 2 safeguards bypass dampers failed 0-PT-77.14B 8/29/2007
- RCE000054, REC to maint; NANN-Unit 2 safeguards bypass dampers failed 0-PT-77.14B
- Plant Issue N-2006-0504, during performance on 0-PT-77.14B, PREACS Train “B” filter in-place test, the as found leakage for Unit 2 safeguards exhaust bypass dampers was out of spec high
- Plant Issue N-2006-0504-E1, Root Cause Evaluation for N-2006-0504
- STCA000046, Engineering to work with I&C to implement strategy (replacement PM) similar to WCAP 16673-P used in 7300 system for Solid State Protection System

Section 4OA5: Other Activities

Temporary Instruction (TI) 2515/166

- Design Change Package DCP-05013, NRC GSI-191, Containment Sump Strainer Design, 08/07/07
- Design Change Package DCP-06010, NRC GSI-191, Incore Sump P Room Drain Modification, 03/26/07
- Design Change Package DCP-06015, NRC GSI-191, RWST Level ESFAS Function to Support Containment Sump Modification, 08/14/07
- Design Change Package DCP-07005, NRC GSI-191, Containment Sump Strainer Interferences, 08/08/07
- Design Change Package DCP-07129, NRC GSI-191, Piping Isulation Modifications, 08/08/07

Condition Reports Generated as a Result of NRC Inspection Activities

- CR021648, On a walkdown of containment the NRC noted a large area of corrosion on a spring hanger in the overhear across from the RHR flat
- CR021650, On a walkdown of containment NRC noted corrosion on the stem/packing gland on 2 hoke valves one next to and one above 1-RC-FC-1482B
- CR021753, The Senior Resident Inspector reported dry boric acid around the stem for several instrument root valves located in 1-EI-CB-131
- CR022238, Inspected snubbers in response to an NRC concern; the rod eye of both snubbers are not free to rotate within the pipe clamp due to minor misalignment
- CR022264, Upon notification by the NRC of a potential gap in excess of prescribed tolerance between B1 and B2 LHSI suction strainer modules
- CR022327, NRC not afforded an opportunity to inspect Unit 1 keyway prior to closure; the current keyway closure process does not contain any notifications to the NRC RI which would afford an opportunity for inspection as required by IP 71111.20
- CR022430, This CR is to document a question asked by the NRC resident inspector concerning station procedures that reference other procedures that have been superceded
- CR022646, Insulation end caps missing during NRC containment closeout
- CR022652, Bent tubing discovered that provides the process signal to 1-RC-FT-1424 and 1425 during NRC/Management walkdown of Unit 1 containment on October 12, 2007
- CR022655, Debris discovered during NRC/Management walkdown of Unit 1 containment
- CR022656, During NRC containment walkdown the NRC Senior Resident inspector identified that two of the equipment hatch bolts have gusset plates that were deformed
- CR022659, During NRC containment walkdown, the NRC Senior Resident Inspector identified that the 1-SI-PT-1925 flex conduit outside “B” loop room is broken

- CR022738, Based on the 3rd quarter NRC exit meeting that occurred on October 18, 2007, there may be 4 cross cutting aspects in Human Performance, Resources, Complete Documentation and Component Labeling which may result in a substantive crosscutting issue if left uncorrected
- CR022799, NRC identified housekeeping issues with Unit 1 Safeguards and Unit 1 Quench Spray
- CR022806, The resident NRC inspector informed the work week coordinator the material condition on Unit 1 Safeguards upper level was unsatisfactory; an unsecured cart containing MOV tools was identified
- CR023182, NRC observations noted questionable component conditions
- CR024989, Two QS pipe supports found in field that were not shown on the location drawings
- CR026391, Negative trend identified in Heat Trace System Health, it was noted at CRT discussion that NRC Resident had mentioned the number of incidents related to heat tracing previously
- CR026492, During NRC plant walkdown the Resident Inspectors identified some discrepancies
- CR026494, NRC inspector raised a concern with Aux Feedwater air operated valve operability when seismic air receivers are removed from service
- CR026581, on 12/7/07, NRC contacted the WCC with concern about HVAC wheel cart that was against motor lead box
- CR026891, NRC questions if 2006 PREACS bypass leakage should be an SSFF
- CR026924, NRC Resident Inspector observes possible drawing discrepancy in Unit 2 Quench Spray Pump House
- CR027328, Based on a question from the NRC Resident, a review of the acceptance criteria for 1-PT-213.15 was performed; step 7.2.2 was reviewed for actions to be completed when a component does not pass acceptance criteria
- CR027422, submitted to address NRC observation, ground water flowing from posted Contaminated Area to clean area
- CR027525, Backup air tanks impact on AFW operability, engineering reviewed position that AFW operability is not affected when backup air tanks are out of service
- CR027607, several seismic air flasks are not included on PRAM list, NRC resident inspector questioned whether the seismic air flasks should be included on the list
- CR027832, the NRC resident inspector found the pipe hanger upstream of 1-EG-SOV-600HB loose
- CR027839, NRC identified boric acid leaks requiring evaluation during walkdown of Unit 2 containment