UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

September 20, 2005

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Sr. Vice President and
Chief Nuclear Officer
Innsbrook Technical Center - 2SW
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT NOS. 50-280/2005-006 AND 50-281/2005-006

Dear Mr. Christian:

On August 26, 2005, the NRC completed a team inspection at your Surry Power Station. The enclosed report documents the inspection findings which were discussed on August 26, 2005, with Mr. D. Jernigan, Surry Site Vice President, and other members of your staff.

The inspection was an examination of activities conducted under your licenses as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations, and with the conditions of your operating licenses. Within these areas, the inspection involved selected examination of procedures and representative records, observations of activities, and interviews with personnel.

On the basis of the samples selected for review, the team concluded that, in general, problems were properly identified, evaluated, and resolved within the corrective action program. However, based on the results of this inspection, the team identified three issues of very low safety significance (Green). The issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. In addition, two licensee-identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. If you contest the NCVs in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, 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 Surry Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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/

Kerry D. Landis, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-280, 50-281
License Nos.: DPR-32, DPR-37

Enclosure: NRC Inspection Report Nos. 05000280/2005006 and 05000281/2005006
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-280, 50-281
License Nos.:	DPR-32, DPR-37
Report Nos.:	05000280/2005006, 05000281/2005006
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	Surry Power Station, Units 1 & 2
Location:	5850 Hog Island Road Surry, Va. 23883
Onsite Dates:	August 8-12 & 22-26, 2005
Inspectors:	B. Desai, Senior Project Engineer (Team Leader) R. Musser Senior Resident Inspector, Harris Nuclear Plant S. Shaeffer, Senior Project Engineer D. Arnett, Resident Inspector, Surry Power Station
Approved by:	K. Landis, Chief, Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2005-006, IR 05000281/2005-006, Virginia Electric and Power Co., 08/08/05 - 08/26/05, Surry Power Station Units 1 & 2, biennial baseline inspection of the identification and resolution of problems. Three violations were identified in the area of corrective actions.

The inspection was conducted by two senior project engineers, one senior resident inspector and one resident inspector. Three findings of very low safety significance (Green) were identified which were classified as non-cited violations. 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 3, dated July 2000.

Identification and Resolution of Problems

The team concluded that, in general, problems were properly identified, evaluated, and corrected. The licensee was effective at identifying problems, issues were prioritized, evaluated appropriately, and dispositioned in a timely fashion. Evaluations of significant problems were in general, of sufficient depth to determine the likely root or apparent causes, as well as, address the potential extent of the circumstances contributing to the problem and provide a clear basis to establish corrective actions. Corrective actions that addressed the causes of problems were generally identified and implemented. A recent licensee self-assessment identified several areas of improvement. Numerous corrective actions have been implemented as well as planned to address issues raised during the recent self-assessment. Significant changes to address issues, such as extent of condition review, ensure corrective actions match what was expected, and manage number of action items stemming from Plant Issues (PIs), are underway or planned. The team observed the corrective action review board as well as the Plant Issues Review Team (PIRT) and noted improvement in the quality of the resolution of PIs. Reviews of sampled operating experience information were comprehensive. Previous noncompliance issues documented as non-cited violations were properly tracked and resolved via the corrective action program. Based on discussions with plant personnel and the low threshold for items entered in the corrective action program database, the team concluded that workers at the site were free to raise safety concerns to their management.

A. NRC -Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

1. Green. The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. The licensee identified, but did not promptly correct, a degraded flow condition on the ‘A’ Emergency Service Water Pump.

   The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment performance and human performance

attributes of the cornerstone. The finding affects the Mitigating Systems Cornerstone function of core decay heat removal and is of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). The finding is also related to the cross-cutting area of problem identification and resolution because the cause of the degraded flow condition was not promptly corrected by the licensee. (Section 4OA2.c)

2. Green. The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality. The licensee identified, but did not promptly correct, a degrading trend in the lubricating oil associated with the 'B' Emergency Service Water Pump.

   The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment performance and human performance attributes of the cornerstone. NRC Inspection Manual Chapter 0609, Appendix A was used to evaluate this finding. Phase 2 Significance Determination Process analyses determined that this finding is of very low safety significance (Green) because only one of the three trains of emergency service water was affected and only one train is required to mitigate the consequences of an accident. The finding is also related to the cross-cutting area of problem identification and resolution because the lubricating oil degradation condition was not promptly identified and corrected by the licensee. (Section 4OA2.c)

3. Green. The team identified a non-cited violation for the failure to comply with 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. Specifically, the licensee failed to take timely corrective actions from a previous event in which corrosion products from the carbon steel air start system prevented the #2 EDG to start.

   The event was determined to be more than minor because it affected the Mitigation System Cornerstone and affected the reliability of the emergency power system. The item was determined to be of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). The finding is also related to the cross-cutting area of problem identification and resolution because the air dryer installation was not implemented in a timely manner. (Section 4OA2.c)

B. Licensee-Identified Violations

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

Report Details

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

a. Effectiveness of Problem Identification

(1) Inspection Scope

The team reviewed items selected primarily from the strategic performance areas of reactor safety and radiation safety to verify that problems were being properly identified, appropriately characterized, and entered into the corrective action program (CAP) for evaluation and resolution. The team reviewed program documents including VPAP-1601, "Corrective Action," which describes the administrative process for documenting and resolving issues. The team reviewed Plant Issues (PIs) associated with systems that ranked the highest on the licensee's risk significance list. The systems were ranked by risk achievement worth, an indicator of how much impact the system's failure or unavailability would have on the plant.

Systems selected included the following:

- Instrument Air
- Component Cooling Water
- Charging System
- Emergency Diesel Generators
- Service Water
- Main Steam
- Auxiliary Feedwater System
- Reactor Coolant System
- Safety Injection System
- Residual Heat Removal System
- Flood Mitigation

The team reviewed a sampling of PIs that had been generated since the last problem identification and resolution inspection. The specific documents reviewed are listed in Attachment 1.

The team conducted multiple computer database searches to identify the threshold at which issues were identified and documented in the CAP. The review was performed to verify that the licensee's threshold for identification and documentation of issues was consistent with procedural guidance and licensee management expectations. The team reviewed a sampling of work orders (WOs) for risk significant systems, which were issued or revised, to verify equipment problems were being entered into the PI database in accordance with procedure requirements.

The team reviewed industry operating experience (OE) items to determine if they were appropriately evaluated for applicability to Surry and whether problems identified through these reviews were entered into the PI database. Once applicable OE issues

were identified, the team evaluated whether corrective actions to prevent recurrence were appropriately taken.

The team reviewed plant equipment issues associated with maintenance rule (a)(1) items, functional failures, maintenance preventable functional failures (MPFFs), and repetitive MPFFs, to verify that maintenance rule equipment deficiencies were being appropriately entered into the PI database.

The team toured the plant to determine whether equipment and material condition problems were being identified. The team attended several of the licensee's Plant Issue Review Team (PIRT) meetings and attended a portion of the Station Nuclear Safety and Operating Committee (SNSOC) meeting to determine the level of management attention that problems received and to assess the effectiveness of the screening process in ensuring that problems were properly captured in the licensee's PI database. The team had discussions with plant personnel and the NRC resident inspector to determine if problems were properly identified.

Assessments were performed by the licensee for individual functional areas such as maintenance, operations, operating experience, and other areas. The results of these assessments were reviewed by the team to determine if they were documented in the licensee's corrective action program as appropriate. These assessments touched on corrective action elements as they related to specific issues within the functional area being evaluated. The team's focus was both, programmatic as well as risk significant system specific. The team also reviewed challenges that Surry has recently faced. These challenges include Surry being in the Degraded Cornerstone as well as the Regulatory Response Column of the NRC Action Matrix. The team also reviewed your recent self-assessment that was conducted in the area of corrective action that identified several areas needing improvement.

The team reviewed VPAP-1601 to determine if the trending at the site level was as prescribed in VPAP-1601 for the Event Codes that represented cross-cutting areas. Finally, the team reviewed various self-assessments for effectiveness in identifying problems in the CAP process and reviewed whether improvement areas were properly captured in the CAP.

(2) Assessment

PI Generation

The team determined that the licensee was identifying problems and entering them into the corrective action program at an appropriate threshold. The team found that problems identified through industry experiences that met the threshold for a PI at the site were entered into the corrective action program for resolution. The team observed appropriate and timely management involvement in the review of the issues documented in PIs.

The team concluded that site personnel were appropriately generating PIs as required by the licensee's program with exceptions. During this inspection, the team identified a

few examples, that demonstrated that site personnel were not always generating PIs at the threshold expected by plant management. The team determined that the station's corrective action program encourages the reporting of plant problems.

Licensee self-assessments were thorough and effective in identifying deficiencies in the corrective action program and other programmatic areas. These deficiencies were routinely entered into the corrective action program and corrective actions were implemented or appropriately planned. Numerous corrective actions have been implemented as well as planned to address issues raised during the recent self-assessment. Licensee has made significant changes to processes to address issues such as extent of condition review, assuring corrective actions match what was expected, and managing a number of action items stemming from PIs. The team observed the corrective action review board (CARB) as well as the PIRT and noted improvement in the quality of the resolution of PIs. As an example, the root cause analysis conducted as a result of the recent reactivity event was comprehensive. The challenge will be for the plant to maintain the positive momentum as well as periodically assessing their effectiveness of these improvements. This will be especially important as the licensee transitions to a new database, which is expected to improve the way in which pertinent information is available and displayed for each PI.

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

The team reviewed a sample of corrective action documents to determine if the licensee appropriately characterized problems and entered them into the CAP for evaluation and resolution. The corrective action documents were selected across the cornerstones of safety predominantly including, initiating events, mitigating systems, barrier integrity, and occupational radiation safety, with focus on areas having the highest risk significance.

The team attended PIRT meetings on several occasions and reviewed PIs that were assigned one of the three Screening Categories (Significant, Potentially Significant, or Routine) to determine whether PIs were properly prioritized and evaluated in accordance with VPAP-1601. Significant PIs involved "Events that need immediate attention to prevent recurrence dealing primarily with nuclear safety, public safety, and personnel safety" and required a Category 1 Root Cause Evaluations (RCE). Potentially Significant PIs included events that are precursors to significant events and typically receive higher levels of cause evaluation than a Routine event with the same frequency of occurrence. The team reviewed PIs covering Significant and Potentially Significant categories, focusing on those associated with risk significant systems, as well as those associated with violations of regulatory requirements and other NRC inspection findings. During this PI review, the team evaluated the disposition of the issue with respect to operability and/or reportability. The team reviewed several PIs which required root cause evaluations to determine the adequacy of the causal determinations.

The team reviewed selected PIs, including those associated with industry operating experience issues, to determine whether site personnel conducted reviews for generic

implications, repetitive conditions, and common cause failure mode determinations when the condition warranted.

The team also attended PIRT meetings and a SNSOC meeting, to assess the licensee's prioritization and evaluation of issues.

(2) Assessment:

In general, the licensee's threshold for classification, prioritization, and evaluation of problems in the corrective action program was considered to be satisfactory. The technical adequacy and depth of evaluations, as documented in individual PIs, were acceptable and the licensee generally prioritized proposed corrective actions in a manner commensurate with the safety significance of the issue. Based on the total number of PIs with root cause evaluations that were reviewed during this inspection, the team concluded that the licensee's corrective action program was effectively implemented with respect to evaluation of problems. The team concluded that the licensee's problem evaluations considered extent of condition and generic implications where appropriate. Operability and reportability of issues were appropriately evaluated and resolved.

The team noted changes in the trending of key site parameters which were incorporated earlier this year to improve the effectiveness of the trending program. These changes included, a uniform cause coding and trending of key performance areas, as well as modification to key site trending programs to rely less on statistical evaluation of trending codes to a process that focuses more on analysis of causal factors, key indicators of program outputs, and indications of programmatic and organizational deficiencies. Recent improvements noticed by the team also included increased attention on causal factors by the newly established CARB. A second example of a recently incorporated trending improvement was the monitoring of unplanned Technical Specification (TS) Action Statement entries. Monitoring of this parameter has resulted in focusing attention on several repetitive equipment issues with good results in bounding the extent of problem and defining a thorough corrective action plan.

One of the areas sampled by the team included how trending was being conducted for component and equipment mispositioning events. Operations personnel were performing word searches to identify events and not relying on the use of cause codes due to the wide variety of ways these events could be coded. The team determined that by using the word search method, it would be difficult to achieve an overall site wide conclusion on configuration control events. Further, there are no assurances that all events would be captured. Improved site wide focus on ensuring appropriate cause code assignment early in the corrective action process could result in an improved method for capturing all issues related to this area.

Additionally, the team had the following observations during the inspection:

- Currently, for routine PIs that are closed to a work order (WO), and the subsequent cancellation of the WO, the original PI is not updated to include that the corrective action effected through the WO was cancelled. This process, in the team's judgement, makes the PI documentation incomplete. The team was

informed that the new software system that is planned for the administration of the CAP will not have this problem.

- The licensee's CAP defines repeat as an event or failure only after the corrective actions from the initial event are fully implemented. For instance, an event or failure that occurs while the corrective actions from the initial event are still in progress, would not be classified as a repeat. This has the potential for not recognizing multiple events or failures, if they occur during the interim period, for trending, reevaluating the adequacy, or escalating corrective actions.

- The team reviewed two PIs where leakby had occurred on several occasions on the main steam non-return valves that should have been identified as a reactivity management precursor. This leakby poses a reactivity challenge due to ensuing cooldown at low power operations. Several PIs related to the leakage of the main steam line non-return valves had been written. However, the reactivity aspect of this issue was not captured in the PI trend code. Further, this issue was not highlighted during the periodic reactivity related discussions that are held at the plant.

- During a review of PIs, the team noticed two instances where the Boric Acid program applicability was marked as "No" on Boric acid leak related issues. This was not in accordance with expectations for initiating a PI. However, the trend code did appropriately highlight a Boric Acid leak program.

- The team noted that concerning preventive maintenance (PM) on Emergency Service Water Pumps, the licensee continued to maintain the periodicity of engine compression checks at 3 years despite the fact that for the last 6 checks, 5 demonstrated low compression.

- The team noted that system engineers in transition had substantial duties for both their old and new systems, thus adding to their workload.

c. Effectiveness of Corrective Actions

(1) Inspection Scope

The team reviewed numerous PIs to verify that the licensee had identified and implemented corrective actions commensurate with the safety significance of the documented issues, and where possible, evaluated the effectiveness of the actions taken. Part of this effectiveness review was conducted by attending a SNSOC meeting and by reviewing SNSOC meeting minutes. The team also verified that common causes and generic concerns were addressed where appropriate. The team reviewed PIs associated with previous non-cited violations (NCVs) to assess the adequacy of corrective actions.

(2) Assessment:

.1 General Comments

From the review of PIs, the team determined that the licensee's corrective actions were effective in correcting problems. Management involvement in the corrective action process was also considered to be effective. The team observed that during the PIRT meeting, managers appropriately questioned PIs and assessed the adequacy and effectiveness of related corrective actions. The team also concluded that corrective actions for previous NCVs were adequate.

The two NCVs related to the service water (SW) system identified below highlights the need for the licensee to be aggressive in identifying and anticipating degraded components when using equipment condition monitoring as opposed to a scheduled Preventive Maintenance (PM).

.2 'A' Emergency Service Water Pump Degraded Flow

Introduction. The team identified a Green Non-cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. Specifically, the licensee failed to promptly correct a degraded flow condition associated with the 'A' Emergency Service Water (ESW) Pump, 1-SW-P-1A.

Description. On August 28, 2004, the licensee completed surveillance testing of the 'A' ESW in accordance with 0-OPT-SW-001, "Emergency Service Water Pump 1-SW-P-1A." The test demonstrated pump flow to be 15,500 gpm. This result placed the pump in the alert range (15,207 to 15,693 gpm) for flow, which was 293 gpm above the operability limit. This matter was documented on PI S-2004-3091. Despite the low margin to the inoperability limit of 15,207 gpm, the licensee did not promptly initiate action to clean the pump suction bowl to address the longstanding issue of marine growth degrading pump flow. The pump was cleaned on September 10, 2005, and post cleaning testing demonstrated a flow rate of 16,400 gpm. During the thirteen days between August 28 and September 10, considering the degradation trend in pump flow, the pump most likely entered the inoperable range for pump flow prior to September 10. Pump flow had been steadily declining since the monthly run performed on June 5, 2004. The following is the pump flow rate data from June 5 - September 10, 2004;

June 5	16,700 gpm
July 3	16,600 gpm
July 31	16,100 gpm
August 28	15,500 gpm
September 10	16,400 gpm (following cleaning)

Prior to 2002, the licensee used a monthly preventive maintenance task to clean the pumps during the summer growth season. Currently, the licensee utilizes condition monitoring to ensure that the ESW pumps are maintained in a condition such that flow rate is prevented from entering the alert and inoperable range. In this instance, the licensee did not initiate corrective action in a timely manner to prevent further flow degradation.

Analysis. The team considered the licensee's failure to take timely corrective action to correct a degraded flow condition associated with the 'A' ESW Pump a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (core damage). The finding was associated with the equipment performance and human performance attributes of the cornerstone. The finding was evaluated using the Phase 1 process of Appendix A to Manual Chapter 0609. The finding affects the Mitigating Systems Cornerstone function of core decay heat removal and is of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). Further, the team also noted that the practice of cleaning the pumps prior to testing caused the licensee to lose the ability to predict degraded conditions in between cleanings and truly assess operability before the conditions are lost and to avoid any appearance of pre-conditioning of components.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part that conditions adverse to quality are promptly corrected. Contrary to this requirement, the licensee failed to promptly correct the condition causing degraded flow condition associated with the 'A' ESW pump. However, because of the very low safety significance and because the issue was entered into the corrective action system as Plant Issue S-2005-4184, this finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000280, 281/2005006-01, Failure to Promptly Correct a Degraded Flow Condition on an Emergency Service Water Pump. This finding is related to the cross-cutting area of problem identification and resolution due to the failure to promptly resolve a known condition adverse to quality.

.3 'B' Emergency Service Water Pump Engine Lubricating Oil Dilution

Introduction. The team identified a Green Non-cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality. Specifically, the licensee failed to promptly correct a condition that resulted in the inoperability of the 'B' Emergency Service Water (ESW) Pump, 1-SW-P-1B.

Description. On August 11, 2005, the licensee determined through lube oil analysis, that the lubricating oil for the 'B' ESW pump's diesel engine (the prime mover for the 'B' ESW pump) was degraded and the pump was declared inoperable. Specifically, the lubricating oil was determined to be diluted with fuel oil (2.9 percent fuel oil) and its viscosity had decreased from a pre-installation value of 16 centistokes (cSt) to 13.8 cSt. A fuel oil leak associated with one of the engine injectors was identified as the cause of the lubricating oil's dilution. This leak was repaired, the oil was changed, and the ESW pump was returned to service on August 12.

In May, 2005, the licensee changed the 'B' ESW pump's engine oil due to it exhibiting a low viscosity condition. Specifically, from December 29, 2004 through May 20, 2005, the viscosity of the engine's lubricating oil decreased from 13.86 cSt to 12.7 cSt. The licensee did not have the ability to check the specific fuel dilution within the lubricating oil

until June, 2005. A specific reason for this decrease in viscosity was not identified. On June 11, 2005, the licensee performed a lubricating oil analysis and determined that the oil's viscosity had decreased from 16 cSt to 15.4 cSt and that the oil contained 0.7 percent fuel oil. On July 7, 2005, the licensee performed a lubricating oil analysis and determined that the oil's viscosity had decreased from 15.4 cSt to 14.6 cSt and that the oil contained 1.6 percent fuel oil. Although these two analyses demonstrated a degrading trend, a plant issue was not written. On August 11, as discussed above, the lubricating oil analysis demonstrated further oil degradation resulting in the pump being declared inoperable. The oil analyses performed in June, July and August of 2005 are performed following a two hour pump run for surveillance testing. Following each of the two hour tests, the lubricating oil became further degraded. The licensee concluded that this degraded condition would not have allowed the pump to meet it's mission time of 30 days. Fuel oil dilution above 2 percent is considered abnormal, and it becomes critical at greater than 6 percent. The lowering viscosity trend noted in June and July of 2005, coupled with the viscosity decrease from December 29, 2004 - May 20, 2005 should have resulted in a more timely identification and correction of the degraded condition. The team considers that the 'B' ESW pump was inoperable from June 11 - August 12, 2005.

Analysis. The team considered the licensee's failure to take timely corrective action to correct a degrading trend in lubricating oil associated with the 'B' ESW Pump a performance deficiency. The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (core damage). The finding was associated with the equipment performance and human performance attributes of the cornerstone. The finding was evaluated using the Phase 2 process of Appendix A to Manual Chapter 0609. The 'B' ESW pump's deficiency existed since the lubricating oil dilution was confirmed to exist on June 11, 2005. Since this is greater than the allowed Technical Specification (TS) outage time for the ESW pump, a Significance Determination Process (SDP) Phase 2 evaluation was required. Based on the results of the Phase 2 screening, the finding was determined to be of very low safety significance (Green) because only one of the three trains of emergency service water was affected and only one of the three trains is required to mitigate the consequences of an accident.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part that conditions adverse to quality are promptly identified and corrected. Contrary to this requirement, the licensee failed to promptly identify and correct the condition causing lubricating oil dilution for the diesel engine associated with the 'B' ESW pump. However, because of the very low safety significance and because the issue was entered into the corrective action system as Plant Issue S-2005-3911, this finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000280, 281/2005006-03, Failure to Promptly Correct a Lubricating Oil Dilution Condition on an Emergency Service Water Pump. This finding is related to the cross-cutting area of problem identification and resolution due to the failure to identify and correct a known condition adverse to quality.

.4 Emergency Diesel Generator (EDG) Failure to start

Introduction. A green Non-Cited Violation (NCV) was identified for the failure to comply with 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. Specifically, the licensee failed to take timely corrective actions from a failure that occurred in 2000 due to moisture related corrosion buildup in the air start motors. Subsequently, the #2 EDG experienced another start failure in 2004.

Description. On July 26, 2000, personnel attempted to manually start the #2 EDG from the main control room in accordance with 2-OPT-EG-001, #2 EDG Monthly slow start exercise, following the completion of maintenance activities on fuel oil filters. When the start pushbutton was depressed, the EDG did not start. Plant Issue (PI) S-2000-1666 was written and a Root Cause Evaluation (RCE) was performed. It was determined that the root cause of the start failure was Design Configuration and Analysis - Equipment not designed for the operating conditions (e.g., humidity). The air start sub-components were fabricated from carbon steel and the internal surfaces were not coated. The starting air source was a bank of receivers, with no air drying equipment on the inlet or discharge of the receivers. This allowed for rust accumulation in the system preventing the air start motors from performing their function. The corrective actions from this RCE were to replace the carbon steel air lines with stainless steel lines, replace the receivers with stainless steel receivers, and install an air dryer to the starting air system to eliminate moisture in the air start system for all three EDGs. On August 1, 2002, Design Change Package 02-030 was completed to replace the air receivers and piping with stainless steel. Discussion with station management determined that addition of the membrane air dryer and oil filter was not required. On November 7, 2004, #2 EDG experienced a start failure during the conduct of 2-OPT-EG-001. Start circuit #1 failed to crank the engine. PI S-2004-3977 was written and a RCE was performed. A root cause for the 2004 start failure was determined to be corrosion on the secondary seat and pilot valve stem section of the air start valve caused by moisture in the EDG staring air supply system. Moisture in the EDG starting air supply system caused corrosion to accumulate. The increased pressure required to operate a corroded air start valve combined with the reduced flow rate of control air which occurs during an air start motor abutment, prevented the air start valve from opening within the required start failure time out. The licensee is currently implementing DCP 04-013 to install air dryers on all 3 EDG's. This DCP is expected to be completed by the end of 2005. In November 2004, the #2 EDG was removed from service, repaired and returned to service with the Technical Specification allowed outage time. A past operability determination revealed that the #2 EDG had remained operable since the #2 start circuit would have automatically started the diesel within the required time.

Analysis. The performance deficiency associated with this finding was a failure of the licensee to implement timely corrective actions following a EDG start failure that occurred in 2000. A root cause analysis performed by the licensee recommended the installation of stainless steel piping/receivers and air dryers. During the design change package scoping process, the licensee determined that the complexity of powering the air dryers would delay implementing the stainless steel piping/receiver modification. Since most of the component failures were caused by corrosion products in the lined

carbon steel air start system, management removed the air dryers from the planned DCP 02-030. At the time of the November 2004 failure, an open DCP existed to install the air dryers but was unscheduled.

This finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events (Loss of Offsite Power) to prevent undesirable consequences (core damage). The finding was associated with the equipment performance and human performance attributes of the cornerstone. The event was determined to be of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater then the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). The finding is also related to the cross-cutting area of problem identification and resolution because the air dryer installation was not implemented in a timely manner.

Enforcement.

10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," requires, in part, that conditions adverse to quality are promptly corrected. Contrary to this requirement, the licensee failed to promptly correct the condition causing the moisture content in the EDG air start system to affect the air start valve. However, because of the very low safety significance and because the issue has been entered into the corrective actions system as Plant Issue S-2004-3977, this finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000280, 281/2005006-03, Failure to Promptly Correct High Moisture Content of the EDG Air Start System.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

The team conducted interviews with licensee personnel to develop a general perspective of the safety-conscious work environment at the site. This included technical discussions with diverse members of plant staff, including operations, maintenance, engineering, chemistry, health physics, emergency preparedness, and security. The discussions were to ascertain if any conditions existed that would cause employees to be reluctant to raise safety concerns. The team also reviewed the licensee's employee concerns program (ECP) which provides an alternate (to PI CAP program) method for employees to raise concerns and remain anonymous, if desired. The team interviewed the offsite ECP Coordinator, reviewed the ECP cases completed for 2003, 2004, and year-to-date 2005 to verify that concerns were being properly reviewed, identified, and resolved. The team also reviewed the licensee's ECP procedural requirements contained in DNAP-0110, Identifying and Addressing Nuclear Safety and Quality Concerns and ECP-GL-1, Nuclear Employee Concerns Program - Virginia. The most recent Nuclear Business Unit Nuclear Safety Culture Self-Assessment, ITC-SA-04-14, dated January 19, 2005, was also reviewed.

(2) Assessment

The team concluded that overall, the licensee's ECP was effective in providing an alternate method for employees and contractors to resolve concerns not adequately addressed through the CAP. Management emphasized the need for all employees to promptly identify and report problems using the appropriate methods established within the administrative programs. The primary methods established by the licensee for the resolution of PIs, including the CAP and the WO system, were readily accessible to all employees. Access to the ECP was available electronically and covered during site access training, although on site promotional literature was limited. Based on discussions conducted with plant employees from various departments, the team did not identify any reluctance to report safety concerns. The team however, had the following observations associated with the ECP:

- The licensee's ECP allows inputs to be classified as "contacts" for issue disposition versus an investigated case file. According to ECP program documents, these contacts are generally to be limited to non-technical issues. One case dispositioned as "contact" had technical attributes which the team considered would have been more suited to be handled as an investigated case. Program guidance could be improved to more effectively define "contact" to include its limitation to the disposition of non-technical cases.

- For one substantiated technical case, documentation of the root cause of the failure and specific corrective actions for the cause were not identified in the licensee's CAP. Based on independent review of the circumstances, the team determined that adequate actions were in place to ensure the root cause of the problem was not currently pervasive.

- Monitoring of contractor ECP programs/processes could be improved. Limited oversight over the nature of contractor ECP programs issues were occurring which limited the licensee's ability to monitor contractor ECP effectiveness.

4OA6 Meetings

Exit Meeting Summary

The team presented the inspection results to Mr. D. Jernigan, Site Vice President and other members of licensee management at the conclusion of the inspection on August 26, 2005.

The team asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee Identified Violations

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

- After improper implementation of a design change on the 1-SW-pump-1C, a root cause was performed and the corrective actions to prevent recurrence required the removal of unused relays and wiring for the pump controls. However, during the return to service of 1-SW-pump-1B, a wire was still found connected to the circuitry causing the pump to fail the run. This was an example where the corrective actions were not effective in preventing recurrence. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that in the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude recurrence. Contrary to the above, the licensee failed to prevent recurrence by not properly implementing DCP 02-075, which called for the removal of all unused relays and wiring in the Emergency Service Water Pump (EWSP) Diesel control panel, causing a wire to still be connected thereby causing the 1-SW-pump-1B to fail its return to service run. The finding is of very low safety significance (Green) and has been entered into the corrective action program as Plant Issue S-2005-3730.

- Technical Specification 6.4 A.1 requires in part that detailed written procedures with appropriate check-off lists and instructions shall be provided for the operations of components involving nuclear safety of the station. Licensee procedure GMP-012, "Roving Flood Watch Responsibilities," requires that the water tight door to mechanical equipment room (MER) #3 be closed or monitored. Contrary to this, on August 9, 2005, the watertight door to MER #3 was found open and unattended. This watertight door is a flood protection barrier between the MER and the emergency switchgear. The flood control door is located behind a fire door and is not readily observable. The exposure time is a conservative exposure time of 60 minutes that is based on the estimated time the individual left the room and the time the door was discovered open. Under the significance determination process (SDP), a regional Senior Reactor Analyst performed a Phase 3 analysis. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this analysis. The dominant accident sequence dealt with an unmitigated piping break originating within the Mechanical Equipment Room that eventually caused an unrecoverable failure of all onsite alternating current. The critical assumptions and major factors as to why the performance deficiency was of such low significance were the low frequency (< once per 1000 years) of piping rupture and the short exposure time (60 minutes). It should be noted that this is the second example of this door being left open and unattended in 2005. This issue was identified in Plant Issue S-2005-3849.

SUPPLEMENTARY INFORMATION

POINTS OF CONTACT (Partial List)

M. Adams, Director, Nuclear Station Safety and Licensing
M. Crist, Manager, Operations
B. Garber, Supervisor, Licensing
T. Huber, Manager, Engineering
D. Jernigan, Site Vice President
L. Jones, Manager, Radiation Protection and Chemistry
C. Luffman, Manager, Protection Services
R. MacManus, Manager, Training
S. Hanson, Acting Manager, Nuclear Oversight
R. Simmons, Manager, Outage and Planning
K. Sloane, Director, Nuclear Station Operations and Maintenance
B. Stanley, Manager, Maintenance
T. Steed, Manager, Organization Effectiveness
E. Turko, Supervisor, Station Nuclear Safety

Other licensee employees included engineers, operations personnel, and administrative personnel.

NRC

N. Garrett, Senior Resident Inspector, Surry
K. Landis, Branch Chief, Division of Reactor Projects, Region II

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

0500280, 281/2005-006-001	NCV	"Failure to Promptly Correct a Degraded Flow Condition on an Emergency Service Water Pump." (Section 4OA2.c(2).2)
0500280, 281/2005-006-002	NCV	"Failure to Promptly Correct a Lubricating Oil Dilution Condition on an Emergency Service Water Pump." (Section 4OA2.c(2).3)
0500280, 281/2005-006-003	NCV	"Failure to Promptly Correct High Moisture Content of the EDG Air Start System." (Section 4OA2.c(2).4)

Attachment

LIST OF DOCUMENTS REVIEWED

Procedures

VPAP-1601	Corrective Action
DNAP-0104	Dominion Nuclear Self-Assessment Program
DNAP-0114	Dominion Nuclear Self-Evaluation Program
DNAP-1004	Boric Acid Corrosion Control (BACC) Program
DNAP-1604	Cause Evaluation Program
DNAP-2000	Dominion Work Management Process
DNAP-3002	Dominion Nuclear Operating Experience Program
VPAP-0815	Maintenance Rule Program
VPAP-1403	Temporary Modifications
VPAP-1404	Post Trip Review Report
VPAP-1408	System Operability
VPAP-1501	Deviations
VPAP-1601	Corrective Action
VPAP-1901	Industrial Safety and Health
VPAP-2801	Commitment Management
VPAP-2802	Notifications and Reports

Plant Issues (PIs)

S-1998-1327	RCS Leakage from 1-RC-6
S-2001-0192	Received Annunciator for Low Accumulator Tank Pressure
S-2001-1738	Qualification of Safety Evaluation Independent Reviewers
S-2001-1802	Independent Review Sample for Safety Evaluations
S-2002-1670	Water Identified in Cable Vaults
S-2002-2828	Repeat Through Wall Leak Upstream of 1-CC-833-VALVE
S-2002-3172	Safety-Related Cables in Submerged Conditions
S-2002-3253	Water in Appendix R Manhole No. 1
S-2003-0134	Degraded Conditions on C RCP
S-2003-1972	Aluminum Component Covers on 1-RH-MOV-1720A/B
S-2003-5031	Leakage from 1-CH-736, VCT Hydrogen Manifold Isolation
S-2003-4728	"B" SI Accumulator Discharge Valve, 1-SI-MOV-1865B Breaker Trip
S-2003-2746	Indication of Seal Head Tank Leak on 1RS-P-2A-PUMP
S-2003-5665	Low Oil Flow Through 1CH-P-1C Pump Bearing Sightglass
S-2003-5906	Active leakage from Unit 2 RHR pumps
S-2003-2828	Out of Tolerance SI System Spring Hanger (ACE)
S-2003-2637	Testing Conditions for Reactor Head Vent Valves
S-2003-4031	1-CC-P-2A, Failed to Start (ACE)
S-2003-2704	Increased Vibration Levels on 1-CH-P-1B-PUMP
S-2003-2771	Low Seal Head Tank Alarms (ACE)
S-2003-4072	Cable Bound on 1-CH-228 (RCE)
S-2003-2598	1-RC-P-1B Seal Head Tank Leakage
S-2003-0134	1-RC-P-1C-MOTOR Lower Radial Bearing Failure (RCE)
S-2003-5113	Questionable Valve position for 1-CH-17 and 1-CH-18
S-2004-4557	1-SI-145 Check Valve Leakage

S-2004-1984	Low Delta Pressure Identified During 2-OPT-RH-003
S-2004-0667	Concerns with Hardened MOV Grease
S-2004-1286	Missing Nut on 1-CH-71
S-2004-2442	Broken Wire Strands on 1-CH-P-1C (ACE)
S-2004-4458	Discrepancy Between Actual and Blended Flow
S-2004-1510	Fouling of 1-CH-E-5B-HTEXCH Inlet Endbell (ACE)
S-2004-3778	Leakage Through 1-CH-435, RCP 1C Seal Injection Header Vent
S-2004-3783	Packing Leakage on 1-CH-340, Loop A Cold Leg Injection Isolation
S-2004-4346	Identified Gaps on Unit 1 Containment Sump
S-2004-4790	Pressurizer PORV Opened Due to Water Intrusion in Transmitter(RCE)
S-2004-2018	Excessive Back-Leakage on 2-SI-241 (RCE)
S-2004-0399	1-DA-P-4B did not Auto-start in Response to High Level Sump
S-2005-0527	Boric Acid Leakage on 2RH-FCV-2605 and 2-RH-HCV-2758
S-2005-0526	Boric Acid Leakage Identified on 2-RH-10
S-2005-0361	Boric Acid from Seals on 2-RH-P-1A, -1B
S-2005-1241	Erratic Indications on 2-SI-FT-2946
S-2005-0183	Inability to Open 1-RC-140, Pressurizer Spray Bypass Valve
S-2005-1665	Mislabeled Hydrogen Bottles for VCT Gas Space (ACE)
S-2005-1769	H2 Leak Down Stream of 1-CH-740
S-2005-1099	H2 Leak on 1-CH-739
S-2005-0501	Unplanned Reactor Operation Below Point of Adding Heat (RCE)
S-2005-1001	Unavailability of Unit 1 Charging Cross-tie not reflected in PSA
S-2005-0598	Pressure Swings on NRHX Letdown Outlet (ACE)
S-2005-0778	Pressure Transients using 1CH-PCV-1145 (Also S-2005-0238 and 0661)
S-2005-1486	Leakage Through Discharge Check Valves 2-CH-P-1B and 2-CH-P-1C
S-2005-2185	Maintenance Rule (MR) Evaluation for Inadvertent Opening of RWST Cross Ties (ACE)
S-2003-5822-E1	NRC non cited violation related to the overspeed trip of U1 TDAFW Pump
S-2004-2082-E1	U2 unavailable to provide minimum AFW flow
S-2004-3026	Emergency air supply tubing for 2-MS-PCV-202A/B is missing a bracket
S-2004-4077-E2	Agastat relay 62B-15H4 failed to operate properly
S-2004-4489-E1	Breaker 15J4 tripped
S-2004-4794	1-FW-P-3B Motor Driven Auxiliary Feedwater Pump inboard packing seal failure
S-2005-1186	Inboard stuffing box catch basin drain line is clogged
S-2005-2027-E2	Agastat 62-FW251B failed to stop timing
S-2005-2813-R1	Discharge pressure for 2-FW-P-2 increased to greater than1430 psig
S-2005-2859-R1	Banging noise occurred and subsided on 2-ST-FW-001
S-2003-0329-E1	1-FW-P-2 tripped on overspeed
S-2003-4022-E1	1-MS-GOV-005 identified a delay in ramp response time
S-2004-0757-R1	Delay of initial test of spare Terry Turbine governor
S-2005-0397-R1	1-OP-FW-001 hydraulic instability at low flow
S-2005-2513-R4	Exceeded general IST acceptance criteria
S-2005-2687	Watertight door left open and unattended
S-2003-2635-R1	1-SW-MOV-101A Depth of engagement of locking pin into stem of the valve
S-2003-3211-E1	No floor drain in emergency service water pump house
S-2003-3741	Service Water supply piping to 2-RS-E-1A & 2-RS-E-1D out of spec

S-2003-4074	Degrading flow rate trend on Emergency Service Water Pump 1-SW-P-1B
S-2003-4353	ESW Pump has 1 gallon/10 minute leak at the angle drive mechanical seal
S-2003-4516-R1	Degradation of Service Water piping associated with 2-SW-REJ-201B-PIPE
S-2003-5145-R1	Leaking joint in discharge piping of U2
S-2003-1867-E1	GMP-C-116 requirements for anchor embedment depth not followed
S-2005-0110-E1	Improper use of oil on 1-SW-P-1A-ENGINE
S-2005-0144-R1	Engine did not start during fuel system filling/venting of 1-SW-P-1A
S-2005-0241-R1	ESW Pump found inoperable
S-2005-0438	1-SW-P-1B ESW Pump flow rate is 131 gpm above Alert
S-2005-0890-R2	Pipe wall thickness on Service Water lines found below minimum allowable value
S-2005-1507-R1	Localized pipe wall thinning
S-2005-1683-E1	1-SW-FI-106D Spray Service Water valves closed
S-2005-2874	Declining performance trend in "B" Emergency Service Water pump, 1-SW-P-1B
S-2005-3236	Declining trend in the "A" ESW Pump, 1-SW-P-1A, discharge flow
S-2004-1196-E1	1-SW-FI-106C, "C" recirc spray heat exchanger service water flow of about 2400 gpm
S-2004-1198	1-SW-FI-106D, "D" recirc spray heat exchanger service water flow indication in the MCR, indicates flow
S-2004-2444-E2	1-VS-E-4E, service water recirc flow out of band on the low end
S-2004-2805	Recirc Spray Service Water valves closed
S-2004-2821-E1	Coolant leak of 2-3 ml/minute on ESW Pump 1-SW-P-1B
S-2005-3911	"Abnormal" range on 1-SW-P-1B for fuel dilution at 2.90%
S-2003-5492-R6	ESW pumps are operable but degraded
S-2003-4655	Degradation and holes rusted through walls dividing 1-SW-MOV-101's and 103's
S-2003-5110-E1	Flood dikes not removed for maintenance of 1-VS-S-1B
S-2003-5233-R1	SW piping is degraded for 2-BC-E-1A, 2-BC-E-1B, and 2-BC-E-1C
S-2004-0350-R1	Flood dike for ESGR from U1 Turb bldg has three deficiencies
S-2004-0994-R1	Accumulation of water in tunnel of Turbine bldg. due to sump pump stopped working
S-2004-1280-R1	Discrepancies in calculations for IPE Analysis critical flood rate
S-2004-1336-R1	MER3 watertight door does not have an alarm
S-2004-1339-E1	Procedure 0-AP-13.00 does not provide specific instructions or explicit guidelines
S-200-2900	Flood dike surrounding the U2 service water valve pit 2A was found with three ½" holes in it
S-2004-3176	Alert alarms on 2-SW-RI-2124 and 2-SW-RI-217, Flood Control Panel testing
S-2005-0169-E1	Labeling of confined spaces
S-2005-1765	"B" flood pnl, LT-A was lit
S-2005-1772	Turbine flood control panels were placed in defeat
S-2005-0716-R1	X-joint spray shields need to be replaced
S-2005-1412-E1	High Water Level U1 CW Pit
S-2005-2835-E1	Flowrate for 1-PL-P-2A was in the operable range
S-2004-1277-E1	MR unavailability time for the Turbine Bldg. Sump Pumps has been exceeded

S-2004-1913-R4	Repositioning to allow gap between expansion joint and spray shield
S-2004-3991	Replacing joint on 1-CW-REJ-100A
S-2005-2617	Gear housing broke on 2-MS-119 when attempting to open valve.
S-2004-1572	In response to recent PI-2004-1567, Engineering conducted a walkdown of tubing and supports for MS pressure transmitters in safeguards.
S-2003-5052	The cable for the limit switch circuit on 2-MS-FCV-204A has an area on the cable outer jacket that is damaged from excessive heat.
S-2004-3578	A packing leak on the north side of the valve stem has eroded away an area of the valve stem about 1/4 inch deep, and about 6 inches by 3 inches wide.
S-2004-2038	2-MS-NRV-201B leaks by excessively, requiring the Main Steam Header to be fully pressurized to perform 2-PT-14.2. This also results in a transient on the RCS (decreasing temperature / pressure). This is long standing reactivity and safety issue.
S-2004-1567	Identified various discrepancies with Unit One Main Steam pressure transmitters piping and supports. All on 27 foot level in overhead of U1 SFGD's, steam side. 3 are missing, 2 are loose and 2 have tie wraps.
S-2004-4865	Leak seal box upstream of 2-MS-382 is leaking. A plume of steam approximately 8 inches in length is blowing from one of the bottom bolts.
S-2004-4123	During log rounds operator discovered a steam plume of approximately 8-10" coming from a body to bonnet leak on 2-MS-382.
S-2004-2653,	2-MS-PI-2486 failed low. This caused Channel 4 Steam Flow indication to fail low and caused closure of the Unit 2 'B' Main Feed Reg Valve.
S-2003-2622,	Unit 2 "B" Steam Line Pressure CH 3 (2-MS-PI-2485) failed low, resulting in "B" Steam Flow CH 3 (2-MS-FI-2484) failing low due to loss of density compensation. This caused "B" MFRV to start to close. Operations Placed "B" MFRV in manual and re-opened.
S-2005-1853,	While working W/O 0059765509, check swagelok fittings for 2-MS-PT-2495-IXMITR, the following was found. 1 ferrule @ bottom of isolation valve 2-MS-ICV-3664, problem corrected.
S-2005-1911	While working W/O 0059765501, inspect fittings for 2-MS-PT-2474-IXMITR, 1 ferrule on bottom side of isolation valve 2-MS-ICV-3514 was found defective. Repaired per W/O.
S-2005-1909	Found faulty Swagelok connections on process tubing for 2-MS-PT-2484; on bottom of ICV-3701 and downstream run of tee @ ICV-3524. Ferrules were not seated on tubing.
S-2005-1853	While working W/O 0059765509, check swagelok fittings for 2-MS-PT-2495-IXMITR, the following was found. 1 ferrule @ bottom of isolation valve 2-MS-ICV-3664, problem corrected.
S-2005-1853	While working W/O 0059765509, check swagelok fittings for 2-MS-PT-2495-IXMITR, the following was found. 1 ferrule @ bottom of isolation valve 2-MS-ICV-3664, problem corrected.
S-2003-5939	Improperly made up swadgelok fitting at union of instrument tubing located above the B MSR for 2-MS-PT-XCOPC. The front ferrule was not engaged on the tube at all.
S-2005-1917	During Unit 2 J Bus Logic Testing (2-OPT-ZZ-002), the following were observed: 2-MS-TV-209 took several minutes to close. The valve finally closed and indicated properly. 2-CC-TV-205B took several minutes to close.

S-2003-4607	2-MS-TV-220 AFW Pump TV does not reset properly without physical assistance on the emergency tappet. The emergency tappet does not drop down low enough for the latching arm to stay latched.
S-2003-4333	During performance of 2-OPT-ZZ-006 (Verification Of Local And Remote Valve Position Indication Of Safety Related Valves Inside Containment) personnel inside the Main Control Room attempted to stroke 2-RC-HCV-2556C remotely but the valve did not stroke.
S-2005-2898	Air bottle pressure for 2-RC-PCV-2455C below minimum allowable pressure of 1200 psig. Regulator pressure high at 98 psig. Shifted service on bottles iaw 2-OPT-RC-002.
S-2004-4850	While monitoring Unit 2 Pressurizer PORV, 2-RC-PCV-2455C, Backup Air System bottle pressure, in accordance with the System Monitoring Plan, a declining trend has been identified.
S-2003-3115	During Instrument Air System Monitoring in accordance with the system monitoring plan, a degrading trend has been identified. Pressurizer PORV, 2-RC-PCV-2455C, Backup Air System pressure regulator 2-IA-PCV-201 output is below the minimum specified setpoint.
S-2005-2963	During Unit 2 Containment entry to change out pressurizer PORV air bottles it was observed that 2-RC-PCV-2456 Air Bottle downstream regulator pressure reads 88 psig. The required pressure band is 90 -110 psig.
S-2003-5267	Backup IA bottle pressure for 2-RC-PCV-2455C had decreased approximately 100# in 3 days (now 1340#). Snooped IA components and found minor leakage at 2-IA-RV-211 at the threaded connection into the bottom of the RV.
S-2003-5266	Noted 2-RC-PCV-2455C backup IA regulator downstream pressure too high at 116#. This high of a pressure means the backup IA is feeding the IA needs of the PORV rather than containment IA.
S-2003-5726	While performing normal watch station rounds, discovered white crystals on 2-CC-FI-260A. Further investigation revealed that the top threaded connections were wet. Scraped the crystals off and had chemistry analyze sample.
S-2004-4258	Performed AS LEFT Type C test of 1-CC-TV-109B after replacement. System pressure boundary would not maintain 46psig. Leakage noted through 1-CC-TV-109B.
S-2005-1054	While reviewing data for PI S-2005-1035 (1-CC-E-1C tested in Alert on 3/9), it was determined that an adverse trend exists in tests for all the CCHXs.
S-2005-2548	Received annunciator 1C-C1 (RCP 1C CC Return Lo Flow) with alarm for lower bearing L.O. CC flow 1-CC-FI-106C just above setpoint.
S-2005-1207	Sample analysis of the U1 charging CC system has confirmed that the system has entered into Action Level 1 (AL1) for chlorides. Samples taken on 3/18/05 have resulted in chloride concentrations of 390 and 330 ppb.
S-2004-3573	During the RTS testing of 1-CC-P-1A after maintenance, there were multiple work orders that required post maintenance testing by the Electrical department. The tests were completed.
S-2004-0276	1-CC-P-1C has inboard seal leakage in excess of 160 DPM. 1-CC-P-1C inboard seal was identified as needing to be replaced and Work Order

	00457959 01 was approved on 10/08/2001 and has since been status 40 (Hold/Task removed from schedule).
S-2004-3417	During a review of the Unit 1 ASME XI Third Interval, Third Period System Pressure Test Program, it was discovered that some of the tests performed did not satisfy Code requirements.
S-2005-3911	The crankcase oil analysis on 1-SW-P-1B has gone into the abnormal range for fuel dilution.
S-2005-3730	During the troubleshooting associated with the previously reported 1-SW-P-1A trip, a control circuit wire that should have been removed was still installed.
S-2005-2914	Indicated level on 2-SD-L1-211 increased from 57% to 66 %.
S-2005-2733	Control room operators noticed that containment sump was pumping more frequently.
S-2005-2667	DCP 04-012 replaced the 6 inch MSTV bypass piping on all three main steam lines.
S-2005-4014	After the return to service of 1-SW-E-1A, a thru wall leak on the seal cooler outlet piping downstream of the cooler outlet valve was identified.
S-2005-4010	1-EP-LP-1SI-A breaker 32 tripped resulting in a loss of the network to the old Admin Building.
S-2005-3959	It cannot be verified that 1-NPT-ZZ-003, ISI pressure test, was performed
S-2005-3936	Vent #2 particulate radiation monitor will not adjust to within isokinetic flow range.
S-2004-2242	PM motor per WO 503302-01 found A phase Raychem burned.
S-2004-3390	Hi Vibration levels at bearing frequencies on 01-FP-P-1.
S-2004-4739	PORV line downstream temperature has increased and is currently elevated.
S-2005-2185	During the performance of 2-1PT-FT-MS-F-495, RWST cross ties were opened.
S-2005-1074	During piping walkdown, 2-OPT-SI-005, operator noted boric acid buildup on a piping welded on 2-SI-FE-2946.
S-2005-3496	Evaluation of Pressurizer pressure control program special Test 2-RC-ST-001.
S-2005-3453	Self Assessment SPS-SA-05-10, Areas for improvement.
S-2003-5611	The B MS non-return valves have significant leak through.
S-2004-0071	While performing PM on 01-VS-E-4A, a small piece of metal was found in the strainer.
S-2004-2298	Operator noted 1-VS-E-4A condenser delta P was out of spec.
S-2004-3593	During the performance of 1-OPT-EG-005, 1-EE-P-1A flow was in the inoperable range
S-2004-3341	During performance of 1-OPT-EG-005, 1-EE-P=1A flow was in the inop range
S-2004-2852	1-EE-P-1A has a degrading trend for pump flow rate and discharge pressure
S-2003-2748	1-EE-P-1A has a degrading trend for pump flow rate as per 1-OPT-EG-005Q
S-2003-3860	1-EE-P-1A has a degrading trend for pump flow rate as per 1-OPT-EG-005Q
S-2003-3881	1-EE-P-1A declared inoperable based on data extrapolation
S-2005-3920	Engineering did not process Drawing Change Requests
S-2004-1301	Vibration point 16 is near alarm set point for EDG #1
S-2004-3591	Vibration Point 16 was 8.86 mils

S-2002-3408	LHSI Pump 1A Seal Cooler Outlet was not tie-wrapped as required by valve lineups
S-2003-4251	2-RS-P-1B could not be closed from the MCR
S-2003-4275	Breaker for 2-RS-P-1B indicates that the failure could have been a "one click" failure
S-2004-2242	Found A phase Raychem burned and damaged on 1-CH-P-1A
S-2004-2279	Found "C" leads loose and Raychem damaged and charred on 1-CH-P-1A
S-2004-4621	Attempted to start 1-SW-P-1C IAW 0-OPT-SW-003
S-2004-1465	Speed indication of #3 EDG reads low on U-1 and U-2 MCR EDG Panels
S-2004-4829	Replacement tach generator could not be calibrated to indicate the proper voltage at 900 RPM
S-2004-3860	One 1/8"X1/2" hex head sheet metal screw found on the skid above the base tank
S-2005-1024	One two occasions, while blowing down the air system strainers for the diesels during operator rounds for the service building, the air pressure alarm was received
S-2004-3977	Emergency Diesel Generator Number 2 Failure to Start
S-2003-2859	The PG flow controller is unstable in automatic below about 80 gpm
S-2003-4327	Control Room Operator Shift Relief Checklist has the RO verify blender setting 3 times per week
S-2003-2683	1-CH-FCV-1114A oscillating 10 to 80 gpm while performing a blended makeup
S-2003-0338	Blender was placed in manual and when it was started the boric acid transfer Pump did not shift to fast
S-2003-3740	A 15 gallon dilution occurred when the blender auto started
S-2003-3410	Blender did an auto makeup earlier than expected
S-2003-3255	Unit 1 PG integrator is slowly integrating with no make up in progress
S-2003-3252	Unreliable, automatic control of primary grade water and boric acid to the boric acid blender
S-2003-2963	While filling and draining the turbine bldg hydrazine tank prior to placing U1 Chloride injection in service
S-2003-2413	Found that the PG Counter/integrator in the McR was not counting
S-2002-2880	U1 Boric Acid supply integrators digital display not indicating properly
S-2004-4669	Primary water integrator indicates a 4 gallon overshoot
S-2003-4731	2-CH-TIC-2114A counting gallons with the Blender in off
S-2004-0204	Boric Acid flow spiking
S-2003-6133	PG integrator locked up & would not respond
S-2003-2982	PG water to U1 blender integrator display LED’s went out
S-2005-2774	Blender control overshoot of 3 gallons
S-2005-0806	U1 Blender PG integrator delivered 4 gallons more than set
S-2005-1784	Final integrator reading incorrect
S-2004-4670	U1 CVCS blender has had multiple activities performed to correct inaccuracy of blended flow
S-2004-4678	Improper blended flow makeup to U1 RCS
S-2004-0207	Blended flow concentration was lower then expected for an extended makeup
S-2003-6102	Improper blended flow makeup

S-2003-6048	Improper blended flow makeup
S-2003-5840	Improper blended flow makeup
S-2003-5594	Improper blended flow makeup
S-2003-2936	U1 PG integrator slowly integrating with no make up in progress
S-2004-4508	PG Integrator for blender slowly counting up with PG isolated
S-2003-3990	Indication on BA integrator went blank
S-2003-3255	U1 PG integrator is slowly integrating with no make up in progress
S-2005-2916	Discovered a rusted bolt in the flange upstream of 2-CH-212 and -213
S-2003-5508	2-CH-CS-100 is difficult to operate
S-2003-5565	U2 Blender control switch is difficult to operate
S-2003-4488	2-CH-212 handwheel freewheels when attempting to close
S-2005-2581	2-CH-415 has body to bonnet leak at the gasket
S-2005-2592	Changed method of filling RCS from the blender to the RWST
S-2005-2102	Valve was leaking from the body-to-bonnet area about 1 gpm
S-2005-3417	Training is opposite what is being performed in the Control Room for blended operations
S-2005-0812	U1 Blender PG integrator delivered 4 gallons of PG more than set for
S-2005-3300	1-CH-118 was found open during a valve line-up
S-2003-3046	Slight packing leakage on 1-CH-FCV-1113A
S-2004-2316	Discrepancies noted with AAC diesel mechanical drawings
S-2004-2369	Operator at AAC house reported a leak of 20 gallons from a sight glass on the roof
S-2004-3116	Identified AAC jacket water and LO temperature showed a downward trend
S-2004-2314	AAC diesel BIMBA cylinder problem
S-2004-0186	SBO Diesel batteries were at the low level mark
S-2003-2549	SBO battery float voltage was found below the acceptable range
S-2003-4187	SBO batteries voltage was found in alert
N–2005-1923	Bimba cylinder found extended during operator rounds on the AAC Diesel
S-2005-1451	AAC jacket water coolant pump was discovered to not be running
S-2005-3707	Fitting hose for the AAC diesel was the wrong size.
S-2005-3062	0-OSP-AAC-001 completed sat with 3 parameters at or near their limits of acceptability
S-2004-3154	1 dps leak from pump mechanical seal
S-2003-3042	While attempting to perform an alt dilute, found the PG Integrator locked up
S-2003-3619	During 0-OSP-AAC-001, coolant was spitting from 0-BCW-RV-001
S-2003-3618	Initiated Emergency stop of the AAC EDG due to a loss of coolant
S-2004-4804	Received 0-WD-D2 "AAC System Alarm"
S-2004-4861	Unable to reset AC "PLC Malfunction" annunciator
S-2004-2497	0-BCW-P-3 found not running
S-2004-2307	AAC EDG procedure steps not adequate
S-2005-2507	MER #3 watertight door open and unattended
S-2005-3849	MER watertight door was found open with #3 MER unattended
S-2003-3235	Review of OPT data for #1 EDG indicates an as left engine speed of 904.5
S-2004-0422	1-EE-112 fuel oil transfer pump 1E flow indicator bypass valve packing glad retaining bolt found sheared
S-2004-0516	Adverse trend on horizontal vibrations of motor for 1-EG-P-1

S-2004-3594	During performance of 1-OPT-EG-005, flow fro 1-EE-P-1D was at the Operability limit of 9.5 gpm
S-2004-3309	Fast start relay wiring is shown incorrectly on the electrical drawings for all EDG's
S-2005-0008	1-EE-53 leaks by approximately 50 cc/day
S-2005-3686	Pilot cell temperature for EDG's were found in the alert range
S-2005-0514	Log entries were found that should have had PI's
S-2005-3354	#1 EDG procedures reveal poor procedure compliance by Electrical Maintenance
S-2005-0916	Thermal overload for 1-EE-P-1B was set incorrectly
S-2005-4106	Two PIs associated with Boric Acid leaks were not identified as associated with the Boric Acid leak detection program.
S-2005-4049	A mechanical maintenance valve procedure had not been developed for the Fisher type 8510 EDISC valves on the CC system.
S-2005-3920	A PI was closed to DCR, which were not processed by engineering.
S-2005-3858	During walkdown of the AAC system, air leak on 0-BSA-10 was noted and a unrestrained ladder over the starting air compressors was noted.
S-2005-3905	The Unit 1 AFW oil coolers are not insulated or heat traced. The Unit 2 AFW oil coolers are heat traced.

PI generated due to NRC questions

S-2005-3860	During a plant walkdown, tape on stainless steel HHSI piping was identified.
S-2005-4076	Two additional instances were identified by the team where the MER # 3 was left open. (in 1996 and 1998.)
S-2005-3880	During system walkdown, a missing label and missing vibration pickup pad were identified on the CC pump/motor.
S-2005-4008	The team reviewed two Pis where leakby had occurred on several occasions on the main steam non return valves that should have been identified as a reactivity management precursor. This leakby poses a reactivity challenge due to ensuing cooldown at low power operations. Several PI related to the leakage of the main steam lines had been written. However, the reactivity aspect of this issue was not captured in the PI trend code. Further, this issue was not highlighted during the periodic reactivity related discussions that are held at the plant.
S-2005-4009	Plant Issus status log could provide misleading information on certain occasions.
S-2005-3893	Actions that would be taken should MSVH room temperature go below the current log spec.
S-2005-3796	Drawing for the AFW system had several discrepancies.
S-2005-4094	The team noted that concerning PM on Emergency Service Water Pumps, you continue to maintain the periodicity of engine compression checks at 3 years despite the fact that for the last 6 checks, 5 demonstrated low compression. There were however, no current operability issues with the pumps.

S-2005-3861	A CC header pressure instrument was identified to be over ranged during a plant walkdown.
S-2004-4621	Emergency Service Water Pump 1-SW-P-1C Failure to start
S-2003-4389	IN 03-15: Importance of Followup Activities in Resolving Maintenance Issues
N-2003-3564	IN 03-15: Importance of Followup Activities in Resolving Maintenance Issues
S-2004-1981	OE Group to review NRC IN 2003-15
S-2003-5077	IN 03-17: Reduced Service Life of Automatic Switch Company Solenoid Valves With Buna-N Material
S-2003-3307	IN 03-08: Potential Flooding Through Unsealed Concrete Floor Cracks
S-2004-4750	IN 04-21: Additional adverse effect of boric acid leakage: Potential impact on Post accident coolant pH
S-2004-2536	IN 04-12: Spent Fuel Rod Accountability

System Health Reports and System Engineer Notebook

Auxiliary Feedwater System
Service Water System
Main Steam System
Heating Ventilation and Air Conditioning System
Component Cooling Water System, 2004-3
Reactor Protection System, 2004-3
Instrument Air and Service Air, 2004-3
Emergency Electrical (EE), 2004-3
Station Blackout Diesel Generator & Support Systems (AAC), 2004-3
Emergency Diesel Generators and Support Systems (EG), 2004-3
H and J Emergency Diesel Generators and associated support systems
Station Blackout Diesel and associated support systems

OTHER DOCUMENTS:

Station Equipment Reliability Issues List (SERIL)
Maintenance Rule a(1) Status Reports
Unavailability Time List for Maintenance Rule a(1) systems
Maintenance Preventable Functional Failure List since 1/1/2004
Repetitive Maintenance Preventable Functional Failure List since 1/1/2004
50 Oldest PI report
Operability Assessment Checklist
Design Change 04-033; Scaling changes for Steam Generator Level Control
Dominion Generation System Engineering Handbook
Operable but Degraded PI's issued since January 1, 2004
Operator Work Around List
Just In Time Training for Apparent Cause Evaluations
ET No. S-97-0338, Rev. 0, 2-RC-P-1C Bolt 16 Evaluation
WO #00376201-01, Repair Unit 2 RCP casing threads
Dominion Nuclear tread Report, 2nd Quarter 2005
2-MOP-CH-002, ECCS Venting, Revision 1

DNAP-1004, Boric Acid Control Program, Revision 3
3rd Quarter 2005 Station Equipment Reliability Issues List (SERIL)
LER 5000280/2003-001-00, Manual Reactor Trip Due to Degraded Conditions on C RCP
0-MCM-1207-01, Pumping of Security and Electrical Cable Vaults, Rev. 0
ET-NAF-05-0023, Safety Analysis Evaluation of the Unit 2 HHSI Flow Shortfall, Rev 0
CME 94-062, SI Accumulator Discharge Check Valve Testing, Rev. 1.
Technical Report NE-1200, Key Operator Actions Assumed in Safety Analysis, Rev. 4

NARRATIVE LOGS:

Unit 1 Operator Logs
Unit 2 Operator Logs

Field Change:

As part of DCP 03-090: Scaling changes for boric acid flow control loops

WO's:

513201-04
433945-01
468408-01
492751-01
516883-01
496428-02
511265-01
605606-01
492456-01
502309-01
502318-01
493071-01
527724-01
110740
504344-01
492786-01
483406-03
514060-03
492784-01
504343-01
509340-01
492873-01
473813-03
499397-01
486504-01
387817-01
388210-01

476571-01
476571-02
476571-03
476571-04
476571-05
475633-03
492964-01
493071-01
497954-02
496487-01
497954-01

Design Change Package:

03-090 Scaling changes for boric acid flow control loops for U1 & 2
04-015 PG flow transmitter replacement U1 & 2
97-033 CH Blender counter controller replacement U1 & 2