

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 10, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Serial No. 96-408
NL&OS/GDM/BCB R3
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
SELF-ASSESSMENT AND CORRECTIVE ACTIONS UPDATE

On May 21, 1996, at the NRC Region II offices, Virginia Power presented the results of a self-assessment regarding the performance of the Surry Power Station. Attachment 1 to this letter provides an update and status, as of September 28, 1996, to that self-assessment. Attachment 2 provides the status of corrective actions and enhancements implemented in response to violations received and internal reviews performed during the current SALP period. A status of the corrective actions and enhancements associated with the Notice of Violation included in NRC Inspection Report 50-280/95-20 and 50-281/95-20 was previously provided in our letter dated July 24, 1996 (Serial No. 95-624A).

This information is provided as a means of documenting activities of regulatory relevance and updating you as to the status of continuing actions to improve performance. No new commitments are intended as a result of this letter. If you have any questions or require additional information, please contact us.

Very truly yours,



James P. O'Hanlon
Senior Vice President - Nuclear

Attachments

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cc: U.S. Nuclear Regulatory Commission
Region II
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Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

Attachment 1

Status Update of May 21, 1996, Surry Power Station Self-Assessment

Operating Performance

The units have continued to operate safely, reliably, and with minimal challenges to safety systems. As of October 10, 1996, Unit 1 had operated continuously for 356 days and Unit 2 for 67 days.

	January 1 - September 30, 1996	
	<u>Unit 1</u>	<u>Unit 2</u>
Safety System Failures	0	0
Automatic Trips	0	1
Forced Outage Rate %	0.0	2.3
Capacity Factor % (MDC Net)	101.1	85.1

SALP Period Accomplishments

- Units 1 and 2 surpassed 100 million megawatt-hours gross generation.
- Licensed power was increased from 2441 to 2546 MWt. Maximum dependable capacity was increased from 820 to 840 MWe.
- Six million man-hours of operation were completed without a lost-time accident.
- The close-out inspection for Generic Letter 89-10, Motor-Operated Valves, was completed.
- Independent Spent Fuel Storage Installation capacity was expanded by construction of the second of three licensed cask storage pads.
- An INPO 1 rating was maintained.
- The Service Water System Operational Performance Inspection close-out inspection was completed.
- The station blackout emergency diesel generator was installed and tested for both units and integrated into plant operations.
- The Maintenance Rule was implemented.

Self-Assessment Program Initiatives

The Self-Assessment Program has been modified to emphasize ownership, accountability, and effective short and long term corrective actions. Some of the station level self-assessments conducted this year are listed below.

- Foreign Material Exclusion
- Procedure Usage
- Loading, Handling, and Placement of Fuel Storage Casks
- Shutdown Safety
- Human Performance
- Contaminated Material Outside the RCA
- NOV/LER Corrective Actions
- Hurricane Response Plan
- Fire Protection Program
- Measuring and Test Equipment
- Technical Specifications Change Implementation
- 1996 Unit 2 Refueling Outage Critique

Human Performance Initiatives

Human performance improvement was a focus area in 1996. Our efforts have been and continue to concentrate on four elements that affect human performance: 1) communications, 2) teamwork, 3) processes, and 4) supervisory development. Specific examples include:

- "Standdown Days" to focus on human performance
- New Operations Standards
- Increased use of interdepartmental teams to conduct root cause evaluations and self-assessments
- Integrated emergency preparedness facility training drills
- Benchmarking to determine "best in class" practices
- INPO Professional Development Seminars

The results of these efforts are being observed in improved performance. The third quarter, 1996 Deviation Report Trend Report reflects a significant improvement in overall human performance. Noteworthy improvements were identified in the areas of work practices, verbal communications, and supervisory methods.

Organizational Enhancements

Organizationally, steps have been taken to strengthen the maintenance area. Specifically, we have established a temporary position of Assistant Maintenance Superintendent to solidify the effective execution of maintenance programs. Additionally, degreed engineers have been infused into firstline maintenance supervisory roles. The success of the Operations Review Board, a working level improvement initiative facilitated by management personnel, has led to the establishment of a Maintenance Review Board and a Radiological Review Board with a focus on continuing improvement through employee involvement at all levels.

Our "Fix-It-Now" team continues to prove successful in reducing minor station deficiencies and enhancing the effectiveness of the Plan of the Day.

Equipment Performance

Equipment performance improvements have been the result of a combination of effective support by the Maintenance and Engineering Departments. Some examples are discussed below.

- **Emergency Diesel Generator (EDG) Reliability Increased**
In September 1996, all three EDGs had logged more than 100 successful sequential start demands, achieving the INPO definition of 100% reliability.
- **Foxboro Digital Instrumentation Upgrade**
The replacement of analog instrumentation with digital instrumentation has been completed for 6 of the 24 main control room instrument racks. The digital instrumentation has proven to be more accurate and reliable. The number of component failures has been significantly reduced as a result of the upgraded racks. The digital instrumentation has also eliminated the Unit 2 steam generator PORV "burping" that has been experienced following a reactor trip. The resolution of this problem has been confirmed through computer modeling and actual post reactor trip response. Two additional instrument racks are scheduled to be upgraded during the 1997 Unit 1 refueling outage.
- **Radiation Monitor Digital Upgrade**
The replacement of analog radiation monitors with digital radiation monitors has been completed for Unit 2. The digital units include a self-analysis function and have proven to be more reliable and easier to maintain. As a result, the periodic testing frequency has been extended from daily (for analog units) to monthly for the digital units. The radiation monitors common to both plant units are scheduled to be upgraded during the first quarter of 1997 and Unit 1 is scheduled to be upgraded by mid-1997.

Equipment Performance (Continued)

- **Feedwater Pump Motor Replacement**
To improve feedwater system reliability, both motors on the Unit 2 "A" feedwater pump have been replaced with motors having increased power and reliability. The motors on the remaining feedwater pumps are scheduled to be replaced by the end of 1998.
- **Charging Pump Service Water Cooler Discharge Piping**
The subject cast iron piping and copper-nickel tubing, which had become degraded, was replaced with heavy wall copper-nickel piping. The new piping has improved system performance and reliability.
- **Rod Control Improvements -- Normal Switchgear Room HVAC Upgrades**
The cooling capacity of the air conditioning system for the Normal Switchgear Room has been increased. This modification has significantly improved the environmental conditions of the rod control power cabinets and eliminated the need for temporary spot coolers. As a result of this and other rod control system improvements, there have been no control rod system related reactor trips since May 1995 and no rod urgent failures since September 1995.
- **Traveling Water Screens Replacement**
All high level and low level traveling water screens have been replaced. This upgrade has significantly reduced the transport of material associated with biological macrofouling into the intake canal and has improved component cooling heat exchanger performance.
- **Unit 2 IRPI M-10**
Extensive troubleshooting and component replacement have been performed to identify and correct the delayed rod bottom indication associated with IRPI M-10. This long standing problem was resolved when the CRDM pressure housing was replaced during the 1996 Unit 2 refueling outage. Proper operation of IRPI M-10 has been confirmed through testing, calibration and post reactor trip response.
- **Emergency Diesel Generator Fuel Oil Line Replacement**
The fuel oil lines from the underground fuel oil storage tank to the emergency diesel generator rooms have been replaced. The new lines have improved fuel oil flow and system reliability.
- **Flow Accelerated Corrosion (FAC) Program**
The FAC program continues to be effectively implemented. When piping component replacements occur, upgraded chrome-moly (P-22) piping is utilized for added corrosion resistance.

Equipment Performance (Continued)

- **Turbine Electro-Hydraulic Control System Upgrades**
Test cards and a recorder were installed to improve the capability for monitoring the main turbine. This improved monitoring was instrumental in identifying the cause of governor valve oscillations, which were then corrected, resulting in more stable load control. The replacement of EHC system power supplies is planned to further reduce the potential for turbine/reactor trips.
- **Unit 2 Station Service Transformer Cable Replacement**
Although no failures had been experienced, the station service transformer cables were replaced following the identification of jacket degradation.
- **Circulating Water Pumps Overhaul**
The Unit 2 "C" and "D" circulating water pumps were overhauled to improve system reliability.
- **Turbine-Driven Auxiliary Feedwater (TDAFW) Pump Improvements**
Maintenance and testing procedures have been revised to address deficiencies identified by a root cause team which was reviewing TDAFW pump trips. Monitoring of pump performance has also improved. These corrective actions have been satisfactory with no overspeed trips being experienced since January 1995.
- **Control Room Annunciator Improvements**
The power supplies for the Unit 1 and Unit 2 control room annunciators have been refurbished. No annunciator power supply deviations have been identified since the refurbishment.

Licensing Basis Improvements

We have committed to convert our current custom Technical Specifications to the Improved Standard Technical Specifications. Our submittal is presently scheduled for February 1998.

A UFSAR Project Team was initiated in May 1996 to assess the content, processes, and usage of the UFSAR. No safety significant issues were identified in this initial phase. The team recommended process improvements, the development of positive ownership, and the need for content reviews. These recommendations are currently being implemented, including a technical assessment review.

The UFSAR technical assessment review is currently being conducted by an interdepartmental team. The team is comprised of Operations, Design Engineering, Licensing, and System Engineering Department personnel.

Attachment 2

Status Update of Corrective Actions and Enhancements Implemented During the Current SALP Period

IR 95-03 - Turbine Driven Auxiliary Feedwater Pump Governor Maintenance

Vendor Training

Station personnel from Mechanical Maintenance, Maintenance Engineering, the Instrument Shop and Training attended a training class at the Woodward governor training facility in Ft. Collins, Colorado. The training addressed various phases of governor maintenance associated with the Turbine Driven Auxiliary Feedwater Pump governor and the Alternate AC diesel generator governor which were manufactured by Woodward.

Work on Safety Related Equipment/Skill-of-the-Craft Training

Training on the requirements for performing work on safety-related equipment and the use of skill-of-the-craft was provided to maintenance personnel during Maintenance Continuing Training. Similar training was also provided to the technical staff and station management in Technical Staff Continuing Training and Technical Staff Management Training.

Review of Maintenance Training Programs

A review of maintenance training programs was conducted by the Training Department and the Superintendent of Maintenance to ensure that requirements for the use of detailed and approved instructions when performing work activities were properly addressed and met management expectations. No concerns were identified in these areas.

IR 95-06 - A. Pressurizer Heatup and Cooldown Limits

Licensed operators were trained on the operating procedures that address pressurizer heatup and cooldown rate limits and solid plant operations. Training on the pressurizer heatup event discussed in the subject inspection report was provided to the technical staff and station management during Technical Staff Continuing Training.

A review of the procedures that could result in in-surges to and/or out-surges from the pressurizer was also completed. Identified procedural enhancements were incorporated into the applicable Unit 1 and 2 procedures. It should be noted that there have been no subsequent heatup/cooldown events since the additional training was completed and the procedural enhancements were incorporated.

The generic implications of heatup and cooldown transients are being evaluated by the Westinghouse Owners Group (WOG). The WOG is currently collecting data on pressurizer heatup and cooldown rates at three test plants. As part of this study, these plants are using Westinghouse operating strategies developed to mitigate these transients. Following issuance, the WCAP will be reviewed for applicability and possible operational/procedural enhancements. WOG is currently scheduled to publish a WCAP on this subject in the late summer of 1996.

IR 95-06 - B. Environmental Effects on Measuring and Test Equipment

Applicable transmitter calibration procedures were revised to provide instructions for performing calibrations in subatmospheric conditions. Also, training programs for I&C maintenance personnel have been revised to include a detailed discussion of the proper use of temperature compensated test equipment, and also include a discussion of the miscalibration of the pressurizer pressure protection transmitters event. A Training Bulletin was also issued to supervisory personnel that discussed their responsibilities regarding the control of measurement and test equipment. Training on the deviation reporting process was also provided to appropriate station personnel to re-emphasize the requirements for reporting and resolving identified station deviations.

IR 95-22 - Technical Specification Surveillances

An additional barrier has been implemented to further assure that Technical Specifications surveillances (periodic tests) are performed within the required time frame and meet the specified acceptance criteria. Administrative Procedure VPAP-1102, "Periodic Testing," has been revised to require the responsible department supervisor to verify by his signature that the surveillance procedure is complete, the acceptance criteria have been reviewed, and the necessary administrative and technical reviews have been performed. The required reviews and supervisory verification are to be completed prior to the end of the applicable periodic test's grace period. A memorandum from the station manager to station personnel was issued highlighting this procedure change.

IR 95-23-01 - Radiation Work Permit (RWP) Compliance

Training

Contractor Indoctrination Training and Contractor Health Physics Training were revised to include a discussion of the events that led to the violation associated with RWP compliance. The training specifically stressed the individual's responsibility for ensuring that procedures and RWPs are not violated.

Observation/Assessment of RWP Compliance

Station management surveyed worker knowledge and work practices during the Spring Unit 2 refueling outage with respect to RWP compliance, and has also attended RWP briefings to ensure that RWP requirements were being accurately stated and understood. Radiation Protection personnel have also conducted surveys of worker RWP knowledge and compliance. The surveys included questions specifically aimed at the worker's knowledge of his RWP and the radiological conditions in his work area. Results of the survey indicate good worker knowledge and understanding of his RWP. Furthermore, the Health Physics self-assessment Procedure HP-1091.281, "Radiation Work Permit Program: Surveillance and Evaluation," was revised to incorporate a periodic assessment of worker knowledge and compliance with RWP requirements.

To ensure consistency in the generation and implementation of RWPs, Radiation Protection (RP) Engineering personnel reviewed randomly selected outage RWPs to ensure adequate instructions were provided. RP-Engineering also attended RWP briefings to ensure proper review of RWP requirements during the briefs. In addition, the Health Physics (HP)-Operations supervisor reviewed RWPs to further ensure consistency among the RWPs being prepared and approved by different HP shifts. The "help codes" available when viewing the computerized version of the RWP were also revised to make them more user-friendly.

NRC Inspection Report 50-280/96-07 and 50-281/96-07 recently noted that the inspectors attended a pre-job briefing for a feedwater check valve leak repair and observed that "...the radiological aspects were briefed in excellent detail. Previous communications, radiation protection escort coverage, stay time, and radiation work permit briefing weaknesses were completely addressed."

IR 96-01-01 - Review of Calculation and Scaling Changes

The station manager documented his expectations regarding the use of detailed action plans in a memorandum to the station superintendents and supervisors. The intent of the memo was to clearly define when a detailed corrective action plan was appropriate, and he referenced the violation associated with the input data discrepancy to the FLOWCALC computer program as an example when such an action plan was warranted but had not been adequately prepared.

An assessment was performed to review the effectiveness of the commitment close-out process for commitments identified in Licensee Event Reports (LERs) and Notices of Violation (NOVs). The commitment tracking process was evaluated as part of this effort. The assessment determined that the corrective actions for specific events described in our responses to NOVs and LERs have been effective. The recommendations generated by this evaluation have been reviewed by station management and are currently being implemented.

IR 96-02 - Preventive Maintenance (PM) of Service Water Expansion Joints

Administrative Procedure VPAP-0803, "Preventive Maintenance Program," has been revised to require SNSOC review and approval for PM task evaluations and PM deferrals for preventive maintenance associated with rubber expansion joints.