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

APR - 9 1993

Report Nos.: 50-280/93-02 and 50-281/93-02

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

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

Facility Name: Surry 1 and 2

Inspection Conducted: March 22 - 26, 1993

Inspector: _____ 4/7/93
B. R. Crowley Date Signed

Approved by: _____ 4/7/93
J. J. Blake, Chief Date Signed
Materials and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope

This routine, unannounced inspection was conducted in the area of Inservice Inspection (ISI). The inspection included a review of the Unit 2 ISI program and plan for the current outage, as well as overall programmatic controls; review of nondestructive examination (NDE) procedures; observation of in-process NDE examinations; review of NDE personnel qualifications; and review of NDE equipment calibration and material certification documentation. In addition, implementation of the licensee's Flow Assisted Corrosion (FAC) (Erosion/Corrosion) program was inspected. Also, followup inspections were performed on previously identified inspection findings.

Results

This inspection indicated that, in general, a good ISI program was in place with good implementation. Examination procedures meeting Code requirements were being used and inspections were being performed by qualified personnel. The procedures, examination techniques used to conduct the examinations, and documentation of examination results were good.

In the area of Flow Assisted Corrosion (FAC), the licensee has a strong, program implemented. The program has strong corporate and site support with dedicated resources and is well documented in corporate standards and site procedures. Degraded piping is being routinely identified and replaced with upgraded materials.

In the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

W. Benthall, Supervisor, Licensing
*R. Blount, Superintendent, Engineering
*D. Grady, Supervisor, NDE
T. Huber, Supervisor, ISI/NDE and Engineering Programs
L. Humphrey, Senior Inspector
*M. Kansler, Station Manager
D. Phelps, Engineer
*J. Price, Assistant Station Manager,
D. Rogers, Lead ISI Engineer
#R. Saunders, Assistant Vice President, Nuclear Operations
*E. Smith, Manager, Quality Assurance
D. Woodyard, Senior Inspector

Contractor Personnel

P. McFadden, NDE Supervisor, Virginia Corporation of Richmond (VCR)
J. Sombo, Steam Generator Eddy Current Coordinator,Westinghouse (W) - Nuclear Services Division (NSD)

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

NRC Resident Inspectors

*J. York, Resident Inspector
S. Tingen, Resident Inspector

*Attended exit interview
#Participated in exit interview via telephone

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

2. Inservice Inspection (ISI) (Unit 2)

The inspector reviewed documents and records, and observed activities, as indicated below, to determine whether ISI was being conducted in accordance with applicable procedures, regulatory requirements, and licensee commitments. The applicable Code for ISI (Units 1 and 2) is the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME B&PV) Code, Section XI, 1980 Edition, Winter 1980 Addenda.

For Unit 1, the second 10-Year interval started in December 22, 1982, and ends October 14, 1993. For Unit 2, the second 10-Year interval started May 1, 1983, and ends May 10, 1994. By letters dated July 11,

and October 1, 1991, VEPCO extended the second interval end dates for both Units based on extended plant outages. The new end dates are July 15, 1994, for Unit 1 and May 9, 1995, for Unit 2. The current Unit 2 outage is the first outage of the third period.

Revision 0 for the Unit 1 second interval program plan and relief requests was submitted to the NRC by VEPCO letter dated September 21, 1982. Revision 1 to the Unit 1 plan and revision 0 of the Unit 2 plan were submitted on December 27, 1982. NRC Safety Evaluation Reports (SERs) dated January 24, 1984, (Unit 1), and January 24, 1986, (Unit 2), were issued. Additional submittals, including revision 2 to the Unit 1 plan were dated November 26, 1985, and April 17, April 24, May 22, June 23, and September 30, 1986. Revision 3 for Unit 1 and Revision 1 for Unit 2 plans were submitted on April 16, 1987. Additional information was provided by VEPCO letters dated June 22, and September 30, 1988, and February 15, and May 15, 1989. The NRC SER covering both units was issued March 14, 1991. The program plans included 14 NDE relief requests. All 14 relief requests were granted, granted with conditions, or determined to not need approval. Revision 4 to the Unit 1 program and revision 2 to the Unit 2 program were issued on March 3, 1993, to make administrative changes, incorporate SER changes, and add additional relief requests (SR-015, 016, 017, 018 and 019).

The licensee's corporate and site ISI organizations are responsible for the nondestructive examination (NDE) program. Contractors furnish NDE examiners and a NDE supervisor with overall coordination and supervision provided by the VEPCO site ISI organization. For the current outage, Virginia Corporation of Richmond (VCR) is performing the majority of NDE examinations. Westinghouse is performing Eddy Current (ET) examinations of steam generator tubing.

a. ISI Program Review (73051) (Unit 2)

The inspector reviewed the following documents related to the ISI program to determine whether relief requests had been approved by NRR, the services of an Authorized Nuclear Inservice Inspector (ANII) had been procured and was involved in ISI activities, the plan had been approved by the licensee and to assure that procedures and plans had been established (written, reviewed, approved and issued) to control and accomplish the following applicable activities: program organization including identification of commitments and regulatory requirements, preparing plans and schedules, and qualification, training, responsibilities, and duties of personnel responsible for ISI; repair and replacement program requirements; personnel qualification requirements; and guidance for identifying and processing relief requests.

- Surry Power Station Unit 2 Inservice Inspection Program - Interval 2 - May 01, 1983 - May 10, 1994

- Surry Power Station Unit 2 Inservice Inspection Plan For The Second Inspection Interval Volume 2 - Revision 1 - February 1991 For Components and Component Supports - May 1, 1983 - May 10, 1994
- Inservice Inspection Manual, Revision 36
- Augmented Inspection Manual, Revision 6
- Surry Unit 2, Interval 2, Period 3, Items Remaining to be Examined, Revision 3
- Work Order (WO) 359816, ISI NDE Inspections (Outage Plan)
- SUADM-M-23, dated 6/8/89, Disposition of ASME Section XI Inspection and Testing Discrepancies
- SUADM-M-25, Revision 0, ASME Documentation Control and Reporting Requirements
- SUADM-M-26, Revision 1, ASME Section XI Inspection and Examination Control
- VPAP-307, Revision 2, Repair and Replacement of ASME Section XI Components
- VPAP-0502, Revision 3, Procedure Process Control
- SSES-1.05, Revision 3, Controlling Procedure For Engineering Assignment Schedule
- SSES-6.01, Revision 1, Controlling Procedure For ISI Engineering
- SSES-6.02A, Revision 1, Controlling Procedure For Repair and Replacement Follower
- SSES-6.02B, Revision 1, Controlling Procedure For Logging ASME XI Reports
- SSES-6.06, Revision 0, Controlling Procedure For The Review of ISI Related Issues/Checklists Prior to Unit Startup Following A Refueling Outage
- SSES-7.01, Revision 1, Controlling Procedure For Surry NDE Services
- SSES-7.02, Revision 0, Controlling Procedure For the Review & Routing of Completed NDE Reports
- NDE-3.1, Revision 6, Preparation, Issue and Control of Nondestructive Examination Procedures

- NDE-4.1, Revision 11, Virginia Power Written Practice For Certification of Nondestructive Examination Personnel

- NDE-6.2, Revision 2, Review of Contractor Nondestructive Examination Interpretation By Virginia Power Personnel

- NDE-6.3, Revision 1, Storage and Control of NDE Calibrated Equipment, Calibration Standards & Consumable NDE Materials

- NDE-6.4, Revision 0, Selection of Calibration Blocks For PSI and ISI Ultrasonic Examination

- NDE-7.2, Revision 5, General Requirements For ISI Nondestructive Examination

Many of the documents and procedures listed above and in paragraph b. below were reviewed during the inspection documented in NRC Report 50-280, 281/92-09. Only changes since that inspection were reviewed. As noted in report 92-09, procedures did not clearly iterate the controls required for the inspection plans provided by corporate. The above review revealed that the plans are now formally issued and controlled.

b. Review of NDE Procedures (73052) (Units 1 and 2)

The inspector reviewed the procedures listed below to determine whether these procedures were consistent with regulatory requirements and licensee commitments. The procedures were reviewed in the areas of procedure approval, requirements for qualification of NDE personnel, compilation of required records, and division of responsibility between the licensee and contractor personnel. In addition, the procedures were reviewed for technical adequacy and conformance with ASME, Sections V and XI, and other licensee commitments/requirements.

- NDE-PT-201, Revision 2, Liquid Penetrant Examination

- NDE-MT-202, Revision 2, Magnetic Particle Examination of Bolting

- NDE-UT-201, Revision 3, Manual Ultrasonic Examination Of Piping Welds

- NDE-UT-204, Revision 2, Inservice Ultrasonic Examination of Class 1 Bolting.

- SUADM-M-20, Revision 2, ASME Section XI Visual Examination Program (VT-1, 2, and 3)

- MRS 2.4.2 VEP-1, Revision 5, Eddy Current Inspection of Preservice and Inservice Heat Exchanger Tubing at Surry Power Plant

- SGPMS-002, Revision 2, Plant Specific Guidelines Eddy Current Data Analysis, Training, and Testing

- DAT-GYP-001, Revision 6, Data Analysis

c. Observation of Work and Work Activities (73753) (Unit 2)

The inspector observed work activities, reviewed NDE personnel qualification records, and reviewed certification records of NDE equipment/materials, as detailed below. During the examinations, the inspector verified: availability of and compliance with approved NDE procedures, use of knowledgeable NDE personnel, and use of NDE personnel qualified to the proper level.

(1) Liquid Penetrant Examination (PT)

The inspector observed the in-process PT examinations as indicated below. The observations were compared with the inspection attributes of the applicable procedure and the ASME B&PV Code to verify the performance of acceptable examinations.

Examinations Observed

Drawing	Item	Welds/Component
11548-WMKS-0127G2	MC-112	W-1-WF
11548-WMKS-0127G2	MC-113	W-1-VF
11548-WMKS-0127C2	MC-079	W-4-KS

(2) Magnetic Particle Examination (MT)

The inspector observed in-process MT inspection of the following weld and compared the inspection with the applicable procedure and the ASME code to verify performance of an acceptable examination:

Drawing 11548-WMKS-RC-R-1.2 - Weld W-1-01 (Item MC-252) (RV Head to Flange Weld, 358" to 537")

(3) Ultrasonic Examination (UT)

The inspector observed calibration activities and portions of the in-process UT examination for the weld indicated below. The weld was inspected using 0°, 45°, and 60° transducers. The inspector compared the examination with the applicable procedures and the ASME B&PV Code to verify that an acceptable examination was performed.

Drawing 11548-WMKS-RC-R-1.2 - Weld W-1-01 (Item MC-252) (RV Head to Flange Weld, 358" to 537")

(4) Visual Examinations (VT)

The inspector observed the in-process VT examination of the pipe supports noted below. The observations were compared with the applicable procedure and the ASME B&PV Code to verify performance of acceptable inspections.

Examinations Observed

Drawing	Item	Welds/Component
11548-WMKS-0101G1	HG-303	H001A
11548-WMKS-0101G1	HG-304	H001B

(5) Eddy Current Examination (ET)

For the current outage, only tubes in steam generator (S/G) B were being examined. All tubes in the S/G were being inspected full length using a 720BPRMS BOBBIN coil probe. BOBBIN coil data was being collected at 400, 200, 100, and 10 KHz. In addition, Rotating Pancake Coil (RPC) inspections will be performed in the low flow area for 301 tubes and for evaluating BOBBIN coil inspection results as needed. As of March 24, 1993, the BOBBIN coil inspection had been completed for approximately 40% of the tubes. Seventeen (17) indications (5 hot leg and 12 cold leg) of tube wall degradation of 20-29% of wall thickness had been identified. Three (3) indications (2 hot leg and 1 cold leg) of tube wall degradation of 30-39% of wall thickness had been identified. No indication greater than 40% wall degradation had been identified.

The inspector observed data acquisition for the following tubes:

ROW	COLUMN	ROW	COLUMN
11	64	3	52
14	64	3	51
9	64	3	50
8	64	3	49

In addition, the analysis process was observed for the following tubes:

ROW	COLUMN	ROW	COLUMN
19	13	11	46
18	13	12	46
17	13	13	46
16	13	14	46
15	13	9	13
8	13		

(6) Personnel Qualifications

The inspector reviewed personnel qualification documentation as indicated below for examiners who performed the examinations detailed in paragraphs (1), (2), (3), (4), and (5) above. These personnel qualifications were reviewed in the following areas: employer's name; person certified; activity qualified to perform; current period of certification; signature of employer's designated representative; basis used for certification; and, annual visual acuity, color vision examination, and periodic recertification.

Examiner Records Reviewed

Method	Level	Employer	Number
PT	II	VCR	6
MT	II	VCR	6
UT	II	VCR	6
VT	II	VCR	1
ET	II	W	2
ET	I(Trainee)	W	1
ET	III	W	2
PT	II	VEPCO	2
MT	II	VEPCO	2
UT	II	VEPCO	2

In addition, qualification records for one VEPCO level III (PT, MT, VT, ET, RT, and UT) examiner was reviewed.

(7) Equipment Certification Records

Equipment certification records as listed below, for equipment used in the inspections detailed in paragraphs (1), (2), (3) and (5) above, were reviewed to ensure compliance with all applicable requirements.

Equipment Type	Equipment Identification
Penetrant Cleaner	Batch 36A4
Penetrant	Batch 130A47
Penetrant	Batch 919Y47
Penetrant Developer	Batch 216K6
UT Couplant	Batch 092031
UT Transducer	Serial M02103
UT Transducer	Serial J29303
UT Transducer	Serial L19134
UT Instrument	Serial 9286704
MT Particles	Batch 91D016
ET MIZ-18A RDAU	Serial W03101
ET MIZ-18A RDAU	Serial W05052
ET Cal Standard	MGT-012-92
ET Cal Standard	MGT-016-90
ET Cal Standard	AD-021-89
ET Cal Standard	AB-010-91

RESULTS

In the areas inspected, no violations, or deviations were identified. In general, a good ISI program was in place with good implementation. Examination procedures meeting code requirements were being used and inspections were being performed in a conscientious manner by qualified personnel.

3. Flow Assisted Corrosion (FAC) (Erosion/Corrosion) Program (49001)

The inspector performed a review of the licensee's FAC piping inspection program. The program is detailed in the following documents:

- General Nuclear Standard STD-GN-0033, Revision 3, Secondary Piping and Component Inspection Program
- VPAP-0807, Revision 0, Secondary Piping and Component Inspection Program
- Mechanical Engineering Implementing Procedure ME-022, Revision 3, Engineering Evaluation Procedure for UT Inspected Components
- Mechanical Engineering Implementing Procedure ME-023, Revision 0, Change Notice 1, CHEC-NDE Software Control
- SSES-2.12, Revision 0, Controlling Procedure for Design Engineering Evaluation of UT Inspected Components
- NDE-UT-104, Revision 1, Ultrasonic Thickness Examination

a. The following describes various aspects of the licensee's program:

- A long term FAC program has been implemented at Surry. The licensee's method of predicting which systems are most susceptible to FAC is EPRI CHECMATE Codes.

  The licensee's FAC program includes the systems that have been predicted to be susceptible to FAC. The model ranks each system's components according to their FAC susceptibility.

- The licensee's primary basis for selecting components for UT inspection at the next outage is the results from the predictive analysis. Engineering judgement, results of predictive analysis, industry experience and results from previous UT inspections are used to select supplemental inspection locations.

- The following systems are included in the licensee's FAC program:

  Feedwater
  Condensate
  Feedwater Heater Drains
  Moisture Separator Drains
  Moisture Separator Reheater Drains
  Extraction Steam
  Steam Generator Blowdown
  Main Steam
  Main Steam Drains
  Auxiliary Steam
  Auxiliary Feedwater Pump Steam Supply
  Crossover and Crossunder Piping

  The following components are included in the E/C program:

  Control Valves/Check Valves
  Tees and Branches
  Expanders and Reducers
  Flow Nozzles and Orifices
  Exit Nozzles
  Elbows and Reducing Elbows
  Straight Pipe Sections
  Heater Drain Tanks
  Reheater Drain Tanks
  Pump Casings (heater drain and condensate pumps)
  Main condenser (internal sparger, expansion joints)

- UT thickness measurement procedures are approved in accordance with the licensee QA program. Procedures define methods for: performing UT measurements, grid spacing criteria, ensuring that followup inspections are taken at

the same locations as the previous inspections, ensuring the use of certified inspection personnel, analyzing the results of UT measurements, and establishing acceptance criteria.

- Minimum wall thickness (t_{min}) requirements for safety-related and non-safety related piping are based on code allowable minimum wall thickness.

- The licensee's method of analyzing UT data includes: calculating the wear rate (wr) based on point to point measurements, band method, area method, and average method; predicting the thickness (t) at the next refueling outage based on $t_{predicted} = t_{measured}$ - wr X current operating cycle time; determination of current acceptance based on $t_{measured} > t_{minimum}$ and $t_{predicted} > t_{minimum}$; and calculation of remaining life based on remaining life = ($t_{measured} - t_{minimum}$) divided by the wr.

- Repair and replacement of safety-related and balance of plant eroded components is covered by the licensee's R&R program meeting ASME Section XI. Welding and NDE of repairs and replacements are accomplished by qualified personnel and suitable procedures for safety-related and balance of plant piping.

- Corporate Engineering has responsibility for the FAC program. The program is covered by the licensee's QA program. The licensee's Management Safety and Review Committee (MSRC) reviews the FAC program.

b. In addition to review of the program, as detailed in the documents listed above, and discussion of the program with the responsible engineer, the inspector reviewed the following outage documents:

- Secondary Piping and Component Inspection Program dated October 2, 1992 and updated on March 3, 1993

- Design Change Number 92-67-2, MI Secondary Piping Replacements Surry Unit 2, including Field Changes 1 through 5

The Inspection Program (Outage Plan) included 80 piping components from 1" to 24" in diameter. In addition the plan included a number of other components such as, main condenser, crossunder piping, valves, steam generator "B" feedring, etc. The Design Change was for replacement of a number of piping runs and components in the Feedwater, Condensate, Steam Drains, and Extraction Steam systems because of FAC. The piping was being upgraded to Chromium - Molybdenum (CR-MO) steel.

The inspector also observed the following field activities to verify inspection grid layout and UT wall thickness measurements were being accomplished in accordance with procedures:

- UT inspection of Component 2-CN-PPS-110 on drawing 11548-WFPD-12

- UT inspection and grid layout of components 2-SD-PSF2-284 and 2-SD-PPS-605 on drawing 11548-WFPD-104

- Grid layout of components 2-SD-PSF2-299 and 2-SD-PPS-623 on drawing 11548-WFPD-106

- Personnel certification records were reviewed for NDE examiners performing the above activities.

Results

The licensee has a very strong, pro-active FAC program with strong corporate and site support and dedicated resources. EPRI developed computerized programs CHECMATE and CHEC-NDE are used for in the selection of susceptible components and evaluation of inspection results. Over 5000 components per unit are included in the program. FAC degraded piping components are being routinely identified and replaced with upgraded CR-MO steel.

In the areas inspected, no violations or deviations were identified.

4. Steam Generator (S/G) Feedwater Nozzle Inspections

See NRC Report 50-280, 281/92-09 for documentation of a previous inspection of this area.

A number of PWR plants have identified thermal fatigue cracking of piping at the S/G Feedwater nozzle. The cracking was attributed to thermally induced fatigue caused by introducing relatively cold feedwater into the main feedwater pipe upstream of the S/G. This cracking problem was identified in 1979 and NRC Bulletin 79-13 was issued to require inspection and replacement of defective feedwater piping components.

Based on the currently identified cracking, the piping components at North Anna steam generator nozzles were inspected and cracks were found in loops "A" and "C". The following actions were performed by the licensee:

- Other utilities were surveyed to determine industry experience.

- A history of inspections and pipe replacement activities, since issue of NRC Bulletin 79-13, for the affected piping was compiled for North Anna and Surry.

- A metallurgical analysis was performed on the cracks found at North Anna.

- Based on the crack depth at North Anna, a crack growth rate was established.

- Based on a projected crack growth rate and the previous replacements of the affected piping at Surry, a scheduled augmented inspection was developed for Surry and North Anna.

Licensee Report, Thermal Fatigue Cracking of Feedwater Piping North Anna Power Station Unit 1, dated February 12, 1993, documents the above actions. The inspector reviewed the report and found it to be a very thorough appraisal of the problem with realistic future inspection schedules recommended.

In the areas inspected, no violations or deviations were identified.

5. Safety Related Pipe Welding (55050)

The applicable code for safety-related pipe welding observed is USA Power Piping Code B31.1.0 - 1967. The inspector observed in-process welding and reviewed in-process records as indicated below to determine whether these activities were being performed in accordance with applicable codes, standards and regulatory requirements.

The inspector observed fitup, in-process welding, and the final weld surface for welds 1, 2, 3, 4, 5, 9, 11, 13, 14, and 16 on drawing DCP-12-E237. In addition, final weld surfaces were observed for non-safety-related welds 3, 4, 5, 7, 8, and 10 on drawing DCP-67-E210. For these welds, the inspector reviewed in-process weld records and examined weld appearance, weld material control, use of correct weld material, use of correct welding procedure, and welder qualification and general knowledge and ability.

In the areas inspected, no violations or deviations were identified.

6. Licensee Action on Previous Inspection Findings

(Closed) Violation 280/92-09-01, Failure to Follow Procedures and Instructions for NDE of Piping

This violation involved failure to perform ISI (VT and PT) inspections of a Recirculation Spray Ring in accordance with Technical Specification and procedure requirements. Only 9" bands around the header, in lieu of 100% of the surface, were VT inspected. In addition, PT testing was being performed without removing blotches of paint and other foreign material.

The licensee's letter of response, dated June 8, 1992, was reviewed and found to be acceptable. The inspector discussed the corrective actions with responsible licensee personnel and reviewed documentation of the following corrective actions:

- All examinations on the ring header were re-performed.

- The NDE examiner who performed the PT inspections without removal of foreign materials was re-trained and re-tested.

- All contract NDE personnel were instructed on the importance of following procedures and were required to re-review the requirements of the surface examination NDE procedures.

- All inspections performed by the individual were reviewed and a random sample of his inspections were re-performed by licensee qualified NDE examiners with no problems being identified.

- Records for the Spray Ring VT inspection performed during the last outage were reviewed and no problems were identified. In addition, a licensee NDE examiner recalled observing part of that inspection and indicated the inspections were performed correctly.

Based on review of the above corrective actions, this item is closed.

7. Exit Interview

The inspection scope and results were summarized on March 26, 1993, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

8. Acronyms and Initialisms

ANII	-	Authorized Nuclear Inservice Inspector
ASME	-	American Society of Mechanical Engineers
B&PV	-	Boiler and Pressure Vessel
CN	-	Condensate System
CR-MO	-	Chromium Molybdenum
EPRI	-	Electric Power Research Institute
ET	-	Eddy Current Test
FAC	-	Flow Assisted Corrosion
ISI	-	Inservice Inspection
MS	-	Main Steam System
MSRC		Management Safety and Review Committee
MT	-	Magnetic Particle Testing
NDE	-	Nondestructive Examination
NRC	-	Nuclear Regulatory Commission
NRR	-	Nuclear Reactor Regulation
PSI	-	Preservice Inspection
PT	-	Liquid Penetrant Testing

PWR	-	Pressurized Water Reactor
QA	-	Quality Assurance
QC	-	Quality Control
RC	-	Reactor Coolant
RDAU	-	Remote Data Acquisition Unit
RII	-	Region 2
RPC	-	Rotating Pancake Coil
R&R	-	Repair and Replacement
RV	-	Reactor Vessel
SD	-	Steam Drains
SER	-	Safety Evaluation Report
S/G	-	Steam Generator
SSES	-	Surry Site Engineering Services
SUADM	-	Surry Administrative Procedure
UT	-	Ultrasonic Testing
VT	-	Visual Testing
VCR	-	Virginia Corporation of Richmond
VEPCO	-	Virginia Electric and Power Company
VPAP	-	Virginia Power Station Administrative Procedure
W	-	Westinghouse
WO	-	Work Order
wr	-	Wear Rate