



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

April 17, 2001

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 NUCLEAR POWER STATION - NRC INTEGRATED INSPECTION  
REPORT 50-280/00-06, 50-281/00-06, 72-002/01-01

Dear Mr. Christian:

On March 31, 2001, the NRC completed an inspection at your Surry Power Station, Units 1 and 2, and the Surry Independent Fuel Storage Installation. The enclosed report documents the inspection findings which were discussed on April 11, 2001, with Mr. R. Blount and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selective procedures and records, observed activities, and interviewed personnel. No findings of significance were identified by the NRC.

In accordance with 10 CFR 2.790 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/NRC/ADAMS/index.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, 72-002  
License Nos.: DPR-32, DPR-37, SNM-2501

Enclosure: Inspection Report 50-280/00-06, 50-281/00-06, 72-002/01-01

Attachments: (1) Supplemental Information  
(2) List of Documents Reviewed  
(3) NRC's Revised Reactor Oversight Program

VEPCO

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cc w/encl:

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DATE	4/17/2001	4/16/2001	4/16/2001	4/12/2001	4/11/2001	4/11/2001	4/12/2001
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281, 72-002

License Nos.: DPR-32, DPR-37, SNM-2501

Report No.: 50-280/00-06, 50-281/00-06, 72-002/01-01

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2  
(Surry Independent Spent Fuel Storage Installation)

Location: 5850 Hog Island Road  
Surry, VA 23883

Dates: December 17, 2000 - March 31, 2001

Inspectors: R. Musser, Senior Resident Inspector  
K. Poertner, Resident Inspector  
G. McCoy, Resident Inspector  
J. Furia, Senior Health Physicist, Region I (Sections 2PS2 and 4OA7)  
R. Gibbs, Senior Reactor Inspector (Section 1R12.2)  
D. Jones, Senior Health Physicist (Sections 2OS1, 2OS3 and  
4OA1.6)  
J. Kreh, Emergency Preparedness Inspector (Section 1EP4)  
W. Sartor, Senior Emergency Preparedness Inspector (Sections 4OA1.3,  
4OA1.4 and 4OA1.5)

Approved by: K. Landis, Chief, Reactor Projects Branch 5  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000280-00-06, IR 05000281-00-06, IR 07200002-01-01, on 12/17/2000 - 03/31/2001; Virginia Electric and Power Co.; Surry Power Station Units 1 & 2 and Independent Spent Fuel Storage Installation. Integrated resident inspector report.

The inspection was conducted by resident inspectors, a senior health physicist, a senior emergency preparedness inspector, an emergency preparedness inspector and a senior reactor inspector from Region II and a senior health physicist from Region I. No findings of significance were identified by the NRC.

### Licensee Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspectors. These violations are listed in section 4OA7 of this report.

## Report Details

Unit 1 operated at power the entire reporting period.

Unit 2 operated at power until February 10, 2001, when the unit was taken off-line to repair a snubber on the discharge piping connecting a pressurizer safety valve to the primary relief tank. The unit was returned to service on February 12, 2001.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### 1R04 Equipment Alignment

##### .1 Partial System Walkdowns

##### a. Inspection Scope

For the systems identified below, the inspectors reviewed plant documents to determine correct system lineup, and observed equipment to verify that the system was correctly aligned:

- Number 3 Emergency Diesel Generator (EDG) (0-OP-EG-001A, "EDG 3 System Alignment," Revision 5);
- Unit 2 "B" Low Head Safety Injection (2-OP-SI-001A, "Safety Injection System Alignment," Revision 8-P1); and
- Unit 2 Auxiliary Feedwater (2-OP-FW-001A, "Auxiliary Feedwater System Valve Alignment," Revision 2-P1).

##### b. Findings

No findings of significance were identified.

##### .2 Complete System Walkdown

##### a. Inspection Scope

The inspectors performed a detailed walkdown on the accessible portions of the Unit 1 Charging Pump Service Water System. The walkdown emphasized material condition and correct alignment of system components such as valves, breakers and hand switches. The inspectors used the following operating procedures (OP) and drawings:

- 1-OP-51.5A, "Charging Pump CC & SW Systems," Revision 12,
- 0-OP-49.1B, "Service Water System - CR Chillers and Supply Strainers Valve Alignment," Revision 14,

- 0-OP-SW-49.3, "Swapping Control Room Chiller and Charging Pump Service Water Supply Headers," Revision 6, and
- Drawings 114548-FM-071B, Sheet 1, 11448-FM-071A, Sheet 3, and 11548-FM-071A, Sheets 2&3.

A review of outstanding work orders was performed to determine if any deficiencies existed which could affect the ability of the system to perform its function.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns

a. Inspection Scope

The Inspectors conducted tours of the following areas to assess the adequacy of the fire protection program implementation. The inspectors checked for the control of transient combustibles and the condition of the fire detection and fire suppression systems (using "SPS Appendix R Report," Revision 17) in the following areas:

- Unit 1 Emergency Switchgear Room,
- Unit 2 Cable Vault,
- Intake Structure-Emergency Service Water Pump Room and Oil Tank Room,
- Alternate Alternating Current Diesel Generator Room, and
- Unit 1 Vital Battery Rooms.

b. Findings

No findings of significance were identified.

.2 Annual Fire Brigade Drill

a. Inspection Scope

The inspectors observed a fire brigade drill to evaluate the readiness of the licensee's personnel to fight fires. Specific aspects evaluated were: use of protective clothing and self contained breathing apparatus; fire hose deployment and reach; approach into the fire area; effectiveness of communications among the fire brigade members and the control room; sufficiency of fire fighting equipment brought to the fire scene; and the drill objectives and acceptance criteria.

b. Findings

No findings of significance were identified.

1R06 Flood Protectiona. Inspection Scope

The inspectors performed a walkdown of the Unit 1 and Unit 2 turbine building 9' 6" elevation, the emergency switchgear room, and mechanical equipment rooms 3 and 4 to ensure that flood mitigation equipment was in place as specified in the final safety analysis report. Specifically, the inspectors reviewed the condition of the following equipment: flood protection dykes, expansion joint spray shields, turbine building sump pumps, water tight doors, water level alarm equipment, and floor drain backflow prevention devices. The inspectors also reviewed abnormal operating procedures relating to flooding to determine if the procedures could reasonably be used to mitigate an event.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalificationa. Inspection Scope

The inspectors observed licensed operator performance during simulator training session RQ-01.2-ST-1, "Faulted Steam Generator (Stuck Open Safety Valve)," Revision 0 to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from a faulted steam generator;
- recognized the high-risk actions in those procedures; and
- appropriately classified the event in accordance with the Emergency Plan.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation.1 Equipment Issuesa. Inspection Scope

For the equipment issues described in the plant issues listed below, the inspectors reviewed the licensee's implementation of the Maintenance Rule (10 CFR 50.65) using



VPAP 0815, "Maintenance Rule Program," Revision 10, and the "Surry Maintenance Rule Scoping and Performance Criteria Matrix," Revision 11, with respect to the characterization of failures, the appropriateness of the associated a(1) or a(2) classification, and the appropriateness of either the associated a(2) performance criteria or the associated a(1) goals and corrective actions:

- S-2001-0406, IRPI F-6 Would Not Track Properly During Control Rod Withdrawal;
- S-2001-0387, 2-FW-P-1A Developed an Outboard Seal Leak;
- S-2001-0349, 2-DG-TV-208A Stroke Test W Outside Acceptance Criteria;
- S-2000-2491, 1-CN-P-1B Tripped During Start Attempt;
- S-2001-0021, 2-SS-TV-201A Goes Closed When The Open Pushbutton Is Released; and
- S-2001-0075, 1-DA-TV-100B Failed To Close.

b. Findings

No findings of significance were identified.

.2 Maintenance Rule Periodic Assessment

a. Inspection Scope

The inspectors reviewed the licensee's periodic assessment, "2000 Maintenance Rule Periodic Assessment, Surry Units 1 and 2" Revision 0, dated October 4, 2000, which was issued in accordance with paragraph a(3) of the Maintenance Rule. The inspectors verified that the assessment was issued in accordance with the time restraints of the Maintenance Rule, and also that the assessment included all required areas including balancing reliability and unavailability, review of a(1) activities, review of a(2) activities, and consideration of industry operating experience. The inspectors reviewed the goals and monitoring for a sample of a(1) structures, systems and components (SSCs), verified appropriate changes were made in a(2) SSC performance criteria, and determined that balancing of reliability and availability met the industry guidance. Review of corrective action data determined that no deficiency reports had been issued in the year 2000, and no self assessments or audits of the Maintenance Rule area had been accomplished.

b. Findings

No findings of significance were identified.

### 1R13 Maintenance Risk Assessments and Emergent Work Control

#### a. Inspection Scope

The inspectors verified the adequacy, accuracy, and completeness of plant risk assessments performed prior to any changes in plant configuration for maintenance activities or in response to emergent conditions. When applicable, inspectors verified the licensee entered the appropriate risk category in accordance with plant procedures. Specifically, the inspectors reviewed:

- Removal from service of 2-FW-MOV-260A during work in the electrical switchyard;
- Auxiliary Feedwater Pump removed from service for testing (2-OPT-FW-003/007) while Auxiliary Feedwater Booster Pump (2-FW-P-4A) is out of service;
- Risk assessment for plant configuration with the following components out of service; 1-VS-F-58A (Auxiliary Ventilation Exhaust Fan), 0-AAC-DG-OM (Alternate Alternating Current Diesel Generator), and 1-SW-P-1C (Emergency Service Water Pump 1C);
- Risk assessment for plant configuration with the following components out of service; 2-SI-P-1A (Unit 2 "A" Low Head Safety Injection Pump/Flowpath), 2-SW-MOV-201B (Unit 2 Bearing Cooling Water Heat Exchanger Service Water Supply Valve), 2-CW-MOV-206D (Unit 2 D Condenser Water Box Inlet Valve), and during the performance of 2-PT-1.2, "NIS Power Range Trip Channel Test;"
- Temporary isolation of the service water supply to two recirculation spray heat exchangers (1-RS-E-1B and 1-RS-E-1C); and
- Simultaneous removal from service of 1-SW-P-1C (1C Emergency Service Water Pump), 1-CC-P-1A (1A Component Cooling Pump), and 1-CN-P-1A (1A Condensate Pump) during a performance test of 2-FW-P-2 (Turbine Driven Auxiliary Feedwater Pump) in accordance with 2-OPT-FW-003 and 2-OPT-FW-007.

#### b. Findings

No findings of significance were identified.

### 1R15 Operability Evaluations

#### a. Inspection Scope

The inspectors evaluated the technical adequacy of the operability evaluations to ensure that operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The operability

evaluations were described in the engineering transmittals (ETs) and plant issues listed below:

- ET S-01-0033, Revision 0, Stroke time Acceptance Criteria For 2-DG-TV-208A;
- ET S-01-0045, Revision 0, Justification Of Flow Readings Taken For Filter Housing 1-VS-FL-3B;
- S-2001-0264, Master Controller Outputs For Both Units Less Than 50% Resulting in Pressurizer Power Operated Relief Valve Setpoint Greater Than 2235 psig;
- S-2001-0660, Operability of the Unit 1 Auxiliary Feedwater Pumps While the Automatic Control for the Ventilation Louvers for Outside Air (1-VS-DMP-41) Was Out of Service;
- S-2001-0040, Operability of Trip Valve 2-SS-TV-204A Following Initial Stroke Failure; and
- S-2001-0400, Operability of Number 3 EDG With Indication of Biological Fouling of Fuel Oil.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

During this inspection period the inspectors reviewed the licensee's list of identified operator workarounds to determine whether any identified workaround affected either the functional capability of the related system or human reliability in responding to an initiating event. The inspectors reviewed the cumulative effect of the identified workarounds to ensure that the identified items did not constitute an inordinate burden on the operating crew.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the following design change packages (DCPs) and associated safety evaluations to verify that the design bases, licensing bases, and performance

capability had not been degraded through the modification and to verify that the modification did not place the plant in an unsafe condition:

- DCP 94-059, Reactor Coolant and Containment Spray Motor Operator Valve Modification;
- DCP 00-053, Isolation of Flux Thimble 2-RC-TW-N8;
- DCP 99-103, Emergency EDG Lube Oil Modification; and
- DCP 00-023, EPD Station Battery Recorder Balanced Voltage Divider.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the post maintenance test procedures and activities associated with the following work activities to determine if the test procedures and activities were adequate to verify operability and functional capability of equipment following maintenance:

- Unit 1 Motor Driven Auxiliary Feedwater Pump 1-FW-P-3B maintenance (1-OPT-FW-002, "Motor Driven Auxiliary Feedwater Pump 1-FW-P-3B," Revision 8);
- 1-DA-TV-100B repair (1-OPT-ZZ-011, "Testing Of Miscellaneous Containment Trip Valves," Revision 8);
- 2-CV-TV-250D repair (2-OPT-ZZ-11, "Testing of Miscellaneous Containment Trip Valves," Revision 10);
- 1-EPD-B-1B equalize (1-EPT-0102-02, "Monthly Station Battery 1B Cell Voltage Check", Revision 2, PAR 1 and 1-EPT-01103-02, "Main Station Battery 1B Quarterly Check," Revision 5);
- WO 445794-02, Replacement of packing on service water rotating strainer 1-VS-S-1B; and
- 1-CW-MOV-106D repair (1-PT-25.1, "Quarterly Testing of Circulating Water and Service Water System Valves," Revision 8, and 1-OPT-CW-001, "Leak Test of the Circulating Water Inlet and Outlet 96" Valves," Revision 3).

b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing

### a. Inspection Scope

For the surveillance tests listed below, the inspectors examined the test procedure and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately demonstrated that the tested equipment was functional and operable:

- 1-IPM-AMS-PNL-001, "AMSAC Functional Test," Revision 6;
- 0-OPT-VS-002, "Auxiliary Ventilation Filter Train Test," Revision 15;
- 2-OPT-SI-005, "LHSI Pump Test," Revision 17;
- 1-OPT-EG-001, "Number 1 Emergency Diesel Generator Monthly Start Exercise Test," Revision 12;
- 0-MPT-0620-01, "Auxiliary and Control Room Ventilation System HEPA and Charcoal Filter Test Criteria Documentation and Verification," Revision 4; and
- 2-OPT-SW-008, "RSHX Service Water Radiation Monitor Pump Test," Revision 2.

### b. Findings

No findings of significance were identified.

## 1R23 Temporary Plant Modifications

### a. Inspection Scope

The inspectors reviewed the following temporary modifications (TMs) and procedurally controlled temporary modifications (PCTMs) to determine whether system operability/availability was affected, that configuration control was maintained, and that the associated safety evaluation (SE) adequately justified implementation:

- TM S2-01-001, Install Electrical Jumper And Lift Leads To Allow Replacement Of The Signal Conditioner Resistor On The Steam Flow Selector Switch (SE 01-004);
- TM S1-00-020, Install Jumpers To Replace Relay FC-2XB (SE 00-069);
- PCTM 1-MOP-36.5, Secondary Plant Inleakage Inspection (SE 96-107);
- TM S2-00-014, Install Substitute Relief Valve On Vent Line Flange Of 2-SI-117 (SE 00-0144).

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP1 Exercise Evaluation

a. Inspection Scope

The inspectors observed two simulator based training evolutions to verify that proper emergency plan classifications, notifications, and protective action recommendations were made. The scenarios observed were conducted on July 28, 2000, and March 20, 2001. The scenario observed on March 20, 2001, did not contribute to the emergency preparedness performance indicator statistics.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope

The inspectors conducted an in-office review of changes to the Emergency Plan, as contained in Revision 44, against the requirements of 10 CFR 50.54(q) to determine whether any of the changes decreased the Emergency Plan effectiveness. Revision 44 included several modifications to the EALs. The inspectors reviewed whether these modifications were discussed with, and agreed upon by, State and local officials prior to implementation, as required by Section IV.B of Appendix E to 10 CFR Part 50.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

The inspectors reviewed the procedurally established access controls for radiation areas (RAs), high radiation areas (HRAs), locked high radiation areas (LHRAs), and very high radiation areas (VHRAs). Incorporation of those controls into selected radiation work permits (RWPs) typically used for work in those areas was also reviewed. Adherence to RWP specified access controls by radiation workers at one job site was observed by the

inspectors. The entrances to 17 LRHAs were evaluated for proper locking and posting for the radiological conditions present. The inspectors performed independent verification of the dose rates which were recorded on survey maps posted at the entrances to one RA, two HRAs, and two LHRAs. The effectiveness of characterization and resolution of selected radiation protection related issues identified and entered into the licensee's corrective action program during the period April through December 2000 was evaluated by the inspectors. Through the above reviews and observations, the licensee's access control program implementation and practices were evaluated by the inspectors for consistency with Technical Specifications and 10 CFR Part 20 requirements.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors evaluated the accuracy and operability of radiation monitoring instruments used for the protection of occupational radiation workers and the adequacy of the program for providing workers with self-contained breathing apparatus (SCBA).

The inspectors reviewed calibration procedures and records for the most recent calibrations of seven types of radiation monitoring instruments. Those instruments included a whole body counter, a personnel contamination monitor (PCM), a small article monitor (SAM), a portal monitor, a RSO-50E ionization chamber, a RM-14 hand held frisker, and an electronic dosimeter (ED). The inspectors verified that the calibrations for those selected instruments were current and that appropriate sources were used for calibration and source checks. The inspectors verified the accuracy of the alarm set points for the PCM, the SAM, and the portal monitor. The inspectors verified the accuracy of the instrument response for a whole body counter, a RSO-50E ionization chamber, a hand held frisker, and an ED through the use of selected calibration sources or the licensee's instrument calibration equipment. The licensee's program for radiation monitoring instrumentation was evaluated for consistency with the requirements for surveys and monitoring delineated in 10 CFR 20 Subpart F and the licensee's implementing procedures.

The report for the licensee's most recent Radiological Instrumentation Program Surveillance and Evaluation (No. 990026) was reviewed by the inspectors. The scope and content of that assessment was evaluated for consistency with requirements for radiation protection program reviews delineated in 10 CFR 20 Subpart B. The inspectors also evaluated the effectiveness of characterization and resolution of selected radiation monitoring related issues which had been entered into the licensee's corrective action program during April through December 2000.

The inspectors toured the plant and verified that SCBA were available at selected locations and that equipment was available for refilling SCBA air bottles. The licensee's lesson plan for respiratory protection training was reviewed by the inspectors and

determined to include provisions for training personnel in the use of SCBA. The training records for four randomly selected individuals who were then currently on duty in the Control Room were reviewed. The inspectors determined that the selected individuals had been trained and qualified in the use of SCBA in accordance with the lesson plan. The licensee's training program for the use of SCBA was evaluated for consistency with the respiratory protection training requirements delineated in 10 CFR 20 Subpart H.

b. Findings

No findings of significance were identified.

**Cornerstone: Public Radiation Safety**

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

The inspectors reviewed the licensee's facilities, processes and programs for the collection, processing, treatment, shipping, storage and disposal of radioactive materials and radwaste. The inspectors conducted reviews of the following: in-plant liquid and solid waste systems; waste processing and sampling program; shipment activities and records; assurance of quality, including corrective action reports; and training.

Systems reviews, which included system descriptions, control panel review, facilities tours, and a review of system changes in accordance with 10 CFR 50.59, was conducted for the following systems/subsystems: liquid waste disposal; steam generator blowdown; and solid waste disposal. The inspectors also toured abandoned in-place radwaste equipment and facilities, and interim storage locations used for processed radwaste. Areas toured included the cubicles containing the following radwaste components: low-level waste drain tanks; high-level waste drain tanks; liquid waste collection tanks; liquid waste surge tanks; radwaste facility (RF) evaporator system; liquid waste reverse osmosis system; liquid waste monitor tanks; contaminated waste drain tanks; laundry waste filter; laundry drains monitor tank; waste disposal evaporator; shredder compactor; spent resin catch tank; spent resin blend tank; and bitumen solidification system.

The inspectors reviewed the licensee's process control program (PCP), including: PCP procedure VPAP-2104, "Radwaste Process Control Program;" process documentation; scaling factor derivation, sampling type, sampling frequency, and effect of changing plant conditions; and determination of waste characteristics and waste classification.

The inspectors selected five solid radwaste shipping records for detailed review against the requirements contained in 10 CFR Parts 20, 61 and 71, and 49 CFR Parts 100-177. The shipments selected included spent resin, cartridge filters and dry active waste, and were Nos. B2000-1, B2000-2, B2000-3, B2000-4, and G2000-4.

The inspectors reviewed the licensee's program for assurance of quality in the radwaste processing and radioactive materials transportation program by reviewing: quality audit 99-13 "Radiological Environmental Monitoring/ Offsite Dose Calculation Manual/



Process Control Program;" departmental self-assessment Task No. 990027, "Radioactive Material Control Program Evaluations;" Self-Assessment No. 20000028, "SRF Liquid Waste Processing," and Task No. 2000-010, "Solid Radioactive Waste Program Evaluation;" and nine plant issues involving the radwaste and transportation program in late 1999 and 2000 (S-2000-2900, S-2000-2732, S-2000-2600, S-2000-2126, S-2000-1920, S-2000-1846, S-2000-1512, S-2000-0287, and S-1999-2728).

The inspectors reviewed the licensee's training program for personnel involved in the radwaste and radioactive materials transportation program with regard to the requirements contained in NRC Inspection and Enforcement Bulletin 79-19 and Department of Transportation 49 CFR, Subpart H. Records reviewed included training requirements, course outlines/training modules, test questions, examinations and examination scores. Reviewed records were for licensee personnel involved in materials handling, radiation protection and radwaste.

b. Findings

No findings of significance were identified.

**4 OTHER ACTIVITIES**

40A1 Performance Indicator (PI) Verification

.1 Safety System Functional Failure PI

a. Inspection Scope

The inspectors performed a review of the Safety System Functional Failure PI for Units 1 and 2. Specifically, the inspectors reviewed this PI for the four quarters of 2000. Documents reviewed included operator logs and licensee event reports.

b. Findings

No findings of significance were identified.

.2 Safety System Unavailability PIs

a. Inspection Scope

The inspectors verified the following Safety System Unavailability PIs for accuracy:

- Emergency AC Power Systems;
- Auxiliary Feedwater Systems; and
- Residual Heat Removal Systems.

In each case, the systems for both Unit 1 and Unit 2 during the four quarters of 2000 were reviewed. To verify the PI data, the inspectors reviewed control room logs, maintenance rule records, and plant issue reports.

b. Findings

No findings of significance were identified.

.3 Emergency Response Organization (ERO) Drill/Exercise Performance PI

a. Inspection Scope

On February 13 -14, 2001, licensee records were reviewed to determine whether the submitted PI statistics (through the fourth quarter of 2000) were calculated in accordance with the guidance contained in Section 2.4 (Emergency Preparedness Cornerstone) of NEI 99-02, Revision 0, "Regulatory Assessment Performance Indicator Guideline." The inspector assessed the accuracy of the PI for ERO drill and exercise performance (DEP) over the past eight quarters through review of a sample of drill records. Documentation reviewed included input for the August 15, 2000, off-year emergency exercise, which was the most recent event providing information to verify the licensee's reported data regarding successes in emergency classifications, notifications, and protective action recommendations.

b. Findings

No findings of significance were identified.

.4 ERO Drill Participation PI

a. Inspection Scope

On February 13 -14, 2001, licensee records were reviewed to determine whether the submitted PI statistics (through the fourth quarter of 2000) were calculated in accordance with the guidance contained in Section 2.4 of NEI 99-02, Revision 0. The inspectors assessed the accuracy of the PI for ERO drill participation during the previous 8 quarters through selective review of the training records for the 142 personnel assigned to key positions in the ERO as of the end of the fourth quarter of 2000.

b. Findings

No findings of significance were identified.

.5 Alert and Notification System Reliability PI

a. Inspection Scope

On February 13 -14, 2001, licensee records were reviewed to determine whether the submitted PI statistics (through the fourth quarter of 2000) were calculated in

accordance with the guidance contained in Section 2.4 of NEI 99-02, Revision 0. The inspector assessed the accuracy of the PI for the alert and notification system reliability through review of a sample of the licensee's records of the bimonthly polling tests and quarterly full-cycle tests conducted from January 1 to December 31, 2000.

b. Findings

No findings of significance were identified.

.6 Radiation Safety PIs

a. Inspection Scope

The inspectors verified the accuracy of the following radiation safety PIs:

- Occupational Exposure Control Effectiveness; and
- Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual.

To verify the PI data, the inspectors reviewed the April through December 2000, monthly files generated pursuant to procedure HPAP-2802 "NRC Performance Indicator Program." The inspectors verified that the procedurally specified sources of information for the radiation safety PIs was collected each month and that potential occurrences were accurately assessed for reportability.

b. Findings

No findings of significance were identified.

40A5 Other

Transnuclear (TN)-32 Spent Fuel Cask Loose Lid Bolts

On February 2, 2001, during troubleshooting activities on cask 2-9 conducted in the decon building, 7 lid closure bolts were discovered to be hand tight. When initially loaded, all lid closure bolts were tightened to a nominal torque value of 930 ft-lbs. A subsequent more comprehensive investigation determined that only 2 of the 48 lid closure bolts remained at the as left torque value. The licensee had observed this bolt relaxation phenomenon previously. As a part of their corrective actions, the licensee changed the cask loading procedure to enhance the lid closure process by specifying final circular tightening passes to check for bolt movement.

The licensee checked the bolt torque on five TN-32 casks located at the Independent Spent Fuel Storage Installation that were loaded prior to this procedural enhancement. The licensee applied a torque of 400 ft-lbs to the lid bolts and checked for bolt movement. Three of the casks exhibited no bolt movement and two of the casks exhibited bolt movement. Cask 2-5 had 12 bolts that showed some bolt movement and Cask 2-2 had 11 bolts that exhibited bolt movement. The licensee determined that the torque applied to the cask lids was adequate and that the casks were operable. The

licensee initiated a root cause team to investigate the cause of the loose bolting. The licensee has consulted with the cask vendor and an independent consultant to review the issue. Presently, the licensee does not plan to load another cask until the root cause evaluation has been completed. Cask 2-9 was offloaded to the spent fuel pool subsequent to the troubleshooting activities. The root cause evaluation is presently scheduled to be completed in April 2001.

#### 40A6 Meetings

##### .1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Blount and other members of the licensee's staff on April 11, 2001. The licensee acknowledged the findings presented.

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

#### 40A7 Licensee Identified Violations

The following findings of very low significance 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 Non-Cited Violations (NCV).

<u>NCV Tracking Number</u>	<u>Requirement Licensee Failed to Meet</u>
NCV 50-280, 281/00006-01	10CFR 30.41(c) requires that, before transferring byproduct material, the licensee transferring byproduct material shall verify that the transferee's (the receiver's) license authorizes the receipt of the type, form, and quantity of byproduct material to be transferred. On May 24, 2000, the licensee failed to properly verify, prior to shipment, that the receiver's license authorized the receipt of the quantity of byproduct material to be transferred. This occurrence was documented in plant issue report No. S-2000-1920.
NCV 50-280, 281/00006-02	10 CFR 71.5 requires NRC licensees to comply with all applicable provisions of 49 CFR when transporting or receiving licensed radioactive materials. 49 CFR 177.843 requires receivers of radioactive materials packages sent exclusive use to survey the vehicle prior to it being returned to service. On September 28, 2000, an exclusive use shipment of radioactive material (surface contaminated object) was received by the licensee and the vehicle returned to service without being surveyed, as described in plant issue S-2000-2126.

If you deny these NCVs, 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, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Surry Power Station.

## SUPPLEMENTAL INFORMATION

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

M. Adams, Superintendent, Engineering  
R. Allen, Superintendent, Maintenance  
R. Blount, Site Vice President  
M. Crist, Director, Nuclear Oversight  
B. Foster, Director, Nuclear Station Safety and Licensing  
D. Llewellyn, Superintendent, Training  
B. McBride, Manager, Emergency Preparedness  
T. Sowers, Director, Nuclear Station Operations and Maintenance  
B. Stanley, Supervisor, Licensing  
T. Steed, Superintendent, Radiological Protection  
J. Swintoniewski, Superintendent, Operations

#### NRC

K. Landis, Chief, Branch 5, Division of Reactor Projects, Region II

### ITEMS OPENED AND CLOSED

#### Opened and Closed During this Inspection

50-280, 281/00006-01	NCV	Failure to properly verify that a receiver's license allows receipt of a quantity of byproduct material prior to shipment as required by 10CFR 30.41(c) (Section 40A7)
50-280, 281/00006-02	NCV	Failure to survey an exclusive use vehicle before returning it to service as required by 10 CFR 71.5 and 49 CFR 177.843 (Section 40A7)

## LIST OF DOCUMENTS REVIEWED

### For Section 2OS1:

VPAP-2101 Radiation Protection Program  
C-HP-1032.060 Radiological Position and Access Control  
C-HP-1032.061 High Radiation Area Key Control  
C-HP-1032.040 Contamination Surveys  
C-HP-1061.020 Personnel Contamination Monitoring and Decontamination  
C-HP-1091.232 Radiological Survey Program; Surveillance and Evaluation  
HP-1061.021 Contaminated Skin Dose Assessment  
HP-1071.020 Controlling Contaminated Material  
HP-1033.322 Tennelec Series 5: Calibration  
HP-1033.222 Tennelec Series5: Operation  
HP-1033.542 Bicron RSO-50E Calibration and Operation  
Form C-HP-1061.020-1 Personnel Contamination Report Log (10/2-7/00)  
Form C-HP-1061.020 Attch. 5 Non-Reportable Personnel Contamination Log (10/2-7/00)  
Form HP-1091.232-1 Radiological Survey Program Evaluation (1<sup>st</sup>Qtr 97 - 3<sup>rd</sup>Qtr 98)  
Radiological Survey Map Nos. 353, 364, 366, 383, and 390  
Beta Dosimetry Report (8/12/83)  
Position Paper - Evaluation of RO-2/2A Beta Correction Factor ((8/6/91)  
RCA Unrestricted Material Release Survey Record (12/13/00 - 1/8/01)  
RWP 01-2-1006 Station and SRF Plant Maintenance  
RWP 00-2-3022 U2 RFO - Steam Generator Primary Side Maintenance  
RWP 01-2-1002 U1&2 Containment  
RWP 00-1-0202 U2 RFO - Outage RP Support  
Plant Issues Nos. S-2000-1041, 2252, 2403, 2796, and 2880

### For Section 2OS3:

HPAP-1033, Revision 8, "Radiation Protection Instrumentation Program"  
HP-1033.010, Revision 3, "Portable Radiation Protection Instrumentation Control"  
C-HP-1031.301, Revision 2, "Calibration of Merlin Gerin Alarming Dosimeters"  
HP-1033.542, Revision 0, "Bicron RSO-50E Calibration and Operation"  
C-HP-1033.710, Revision 0, "Eberline Personnel Monitor Model PM-7 Calibration and Operation"  
HP-1033.721, Revision 1, "Calibration and Operation of Eberline Model PCM-1B/1C"  
HP-1041.065, Revision 0, "Whole Body Counter Calibration"  
HP-1033.440, Revision 2, "NE Technology SAM9/SAM11 Calibration and Operation"  
C-HP-1033.401, Revision 0, "Eberline RM-14 Calibration and Operation"  
C-HP-1042.350, Revision 2, "Self Contained Breathing Apparatus Use"

## NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

<b>Reactor Safety</b>	<b>Radiation Safety</b>	<b>Safeguards</b>
<ul style="list-style-type: none"><li>• Initiating Events</li><li>• Mitigating Systems</li><li>• Barrier Integrity</li><li>• Emergency Preparedness</li></ul>	<ul style="list-style-type: none"><li>• Occupational</li><li>• Public</li></ul>	<ul style="list-style-type: none"><li>• Physical Protection</li></ul>

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.