UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

April 26, 2001

Carolina Power and Light Company
ATTN: Mr. J. S. Keenan
Vice President
Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INSPECTION REPORT 50-325/00-06, 50-324/00-06

Dear Mr. Keenan:

On March 31, 2001, the NRC completed an inspection at your Brunswick Units 1 and 2. The enclosed report documents the inspection findings which were discussed on April 6, 2001, with you 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 selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green).

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/

Brian Bonser, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-325, 50-324
License Nos: DPR-71, DPR-62

Enclosure: (See page 2)

Enclosure: Inspection Report 50-325/00-06, 50-324/00-06

cc w/encl:
J. J. Lyash, Director
Site Operations
Brunswick Steam Electric Plant
Carolina Power & Light
Electronic Mail Distribution

C. J. Gannon
Plant Manager
Brunswick Steam Electric Plant
Carolina Power & Light Company
Electronic Mail Distribution

Terry C. Morton, Manager
Performance Evaluation and
Regulatory Affairs CPB 7
Carolina Power & Light Company
Electronic Mail Distribution

David C. DiCello, Manager
Regulatory Affairs
Carolina Power & Light Company
Brunswick Steam Electric Plant
Electronic Mail Distribution

Leonard Beller
Licensing Supervisor
Carolina Power and Light Company
Electronic Mail Distribution

William D. Johnson
Vice President & Corporate Secretary
Carolina Power and Light Company
Electronic Mail Distribution

John H. O'Neill, Jr.
Shaw, Pittman, Potts & Trowbridge
2300 N. Street, NW
Washington, DC 20037-1128

Mel Fry, Director
Division of Radiation Protection
N. C. Department of Environment
and Natural Resources
Electronic Mail Distribution

Peggy Force
Assistant Attorney General
State of North Carolina
Electronic Mail Distribution

Robert P. Gruber
Executive Director
Public Staff NCUC
P. O. Box 29520
Raleigh, NC 27626-0520

Public Service Commission
State of South Carolina
P. O. Box 11649
Columbia, SC 29211

Donald E. Warren
Brunswick County Board of
Commissioners
P. O. Box 249
Bolivia, NC 28422

Dan E. Summers
Emergency Management Coordinator
New Hanover County Department of
Emergency Management
P. O. Box 1525
Wilmington, NC 28402

Distribution w/encl: (See page 3)

Distribution w/encl:
D. Ashley, NRR
A. Boland (Part 72 Only)
RIDSNRRDIPMLIPB
PUBLIC

PUBLIC DOCUMENT (circle one): YES NO

OFFICE	DRP/RII	DRP/RII	DRP/RII	DRP/RII	DRS/RII	DRS/RII	DRS/RII
SIGNATURE	GMacDonald:vg	TEaslick	EBrown	EGuthrie	FWright	BCarrion	RChou
NAME	gm	te	eb	eg	fw	bc (via e-mail)	ml (for)
DATE	4/26/2001	4/25/2001	4/25/2001	4/25/2001	4/20/2001	4/23/2001	4/20/2001
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICE	DRS/RII	DRS/RII	DS/RII				
SIGNATURE	MScott	ETesta	SVias				
NAME	ml (for)	et	ml (for)				
DATE	4/20/2001	4/23/2001	4/20/2001				
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\Program Files\Adobe\Acrobat 4.0\PDF Output\0006 drp.wpd

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-325, 50-324
License Nos:	DPR-71, DPR-62
Report No:	50-325/00-06, 50-324/00-06
Licensee:	Carolina Power and Light Company
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	8470 River Road SE Southport, NC 28461
Dates:	December 31, 2000 to March 31, 2001
Inspectors:	T. Easlick, Senior Resident Inspector E. Brown, Resident Inspector E. Guthrie, Resident Inspector R. Carrion, Health Physicist (2OS1, 2OS2, 2OS3) R. Chou, Reactor Inspector (1R02, 1R17) J. Kreh, Emergency Preparedness Inspector (1EP4) M. Scott, Senior Reactor Inspector (1R02, 1R17) E. Testa, Senior Health Physicist (2OS1, 2OS2, 2OS3) S. Vias, Senior Reactor Inspector (1R02, 1R17) F. Wright, Senior Health Physicist (2OS1, 2OS2, 2OS3)
Approved by:	B. Bonser, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000325-00-06, IR 05000324-00-06, on 12/31/00-3/31/01, Carolina Power and Light Company, Brunswick Steam Electric Plant, Units 1 & 2. Operability evaluations.

The inspection was conducted by resident inspectors, regional radiation specialists, and regional inspectors. The inspection identified one Green finding. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 “Significance Determination Process” (SDP). Findings for which the SDP does not apply are indicated by “No Color” or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

Cornerstones: Initiating Event, Mitigating Systems

- Green. The inoperability of two safety-related 480 volt feeder breaker overcurrent trip devices resulted in an unrecognized increase in risk while the plant was operating over the past three years. The inoperability of the overcurrent trip devices had a credible impact on safety in that if a fault occurred on the 2XD and 2XM motor control centers a loss of the division II accident mitigating systems could have occurred. The following systems were affected: core spray, residual heat removal, standby liquid control, emergency diesel generator 4, 250 volt battery charger, and service water.

  This issue was of very low safety significance (Green) based on the small probability of a bus fault actually occurring. No violations of NRC requirements were identified because the licensee met regulatory requirements associated with maintenance and quality controls of the breaker components (Section 1R15).

Report Details

Unit 1 began the report period operating at 100 percent rated thermal power (RTP). On January 22 the unit RTP was derated to 620 MW electric or approximately 70 percent RTP due to the loss of the Weatherspoon transmission line. The unit returned to 100 percent RTP on January 23 following return of the Weatherspoon transmission line. On February 2 power was reduced to 56 percent RTP to perform valve and scram time testing as well as control rod pattern improvements. Power was restored to 100 percent RTP on February 3. The unit operated at 100 percent RTP for the remainder of the inspection period.

Unit 2 began the report period operating at 100 percent RTP. On January 15 the 2B reactor recirculation pump motor-generator set tripped off due to a failure of its exciter collector ring. Power was reduced to approximately 36 percent RTP. The plant operated in single loop at approximately 67 percent RTP until the motor-generator set was repaired. The unit returned to two loop operation and power was restored to 100 percent RTP on January 17. On February 13 the unit operated with reduced final feedwater temperatures prior to a reactor shutdown on February 24 to begin a refueling outage. During the downpower evolution a main generator trip and operator manual scram occurred at 37 percent RTP. On March 26 the reactor was started up and was returned to 100 percent RTP on March 31. On March 31 unit power was reduced to approximately 60 percent RTP to conduct rod improvement changes. The unit operated at approximately 60 percent RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R02 Evaluations of Changes, Tests, and Experiments

a. Inspection Scope

The inspectors reviewed nine safety evaluations to confirm that the licensee had appropriately reviewed and documented changes in accordance with 10 CFR 50.59 and licensee procedure REG-NGGC-0002, 10 CFR 50.59 and Other Regulatory Evaluations, Revision (Rev) 3. The inspectors also reviewed 12 10 CFR 50.59 screenings, for which the licensee had determined that safety evaluations were not required, to confirm that the licensee's conclusions to "screen out" these changes were correct and consistent with 10 CFR 50.59, and licensee procedure REG-NGGC-0002. The inspectors also reviewed applicable sections of the Updated Final Safety Analysis Report (UFSAR), site drawings, supporting analyses, calculations, Technical Specifications (TS), and procedures to ensure appropriate information was considered and to ensure that changes could be made to the facility without obtaining a license amendment.

In addition, the inspectors reviewed eight corrective action program reports and self-assessments to confirm that the licensee was identifying issues, entering issues into the corrective action program, and resolving the concerns.

Safety Evaluations Reviewed:

99-0125	Addition to Technical Requirements Manuals (TRM), of “Configuration Risk Management Program” due to a commitment to NRC to support the increased allowed outage time per TS 3.8.1 amendment for E-bus work
99-1124	Change to ASTM D3803-1989 for New ESF Charcoal Test Standard. (Engineering Service Requests (ESRs) 97-00078, 99-00421, 99-00524, 97-00023, & 97-00078)
99-1589	The Use of Alternate Temperature Indications in Lieu of Bottom Drain Temperatures
00-0287	Redefine the Requirements for Main Turbine Bypass Valve System Operability (ESR 00-00023)
00-1896	Diesel Generator Operability Evaluation
99-1179	ESR 99-00422, Increasing Intake Canal Temperature Limit from 89 to 90.5 degrees Fahrenheit
99-1201	Evaluate Impact of Reduced HPCI Minimum Flow
99-1661	Install Capability to Provide Shedding of Large 4.16kV BOP Motors During a LOCA on Unit 1
00-1032	ESR 00-00253, Reduce Number 2 Recirculation Pump Limiter Runback Setpoint to Recover Reactor Water Level after a Feed Pump Trip

Screened Out Changes Reviewed:

99-0258	Replacement of Degraded Generator CT (ESR 99-00144)
99-0959	Replacement of Obsolete ASCO Solenoids with AVCO Solenoid Valve Cluster Assembly (ESR 99-00333)
99-1668	Core Spray Pump Flowrate Changes
99-1757	Reduction of Qualified Life For Valcor Solenoid Valves to Account for Post-Accident Continuing Operation for 30 Days in the Energized State
99-1765	Validation of data for procedure 0SP-96-009, Rev 1, for LPCI/RHR System Resistance Test (ESR 00-00068)
99-1792	Verify Closure of the Scram Discharge Vent and Drain Lines Prior to Bypassing the SDV High Level Trip - Procedure 0-EOP-01-LEP-02

00-0718	Technical Specification Surveillance for Control Rod 26-47 Modified to Allow a Partial Insertion Instead of a Full Notch
00-1809	Clarification for Testing of Technical Specification 3.4.5
98-0138	EOP Procedure Changes to Implement BWOG Severe Accident Management Guidelines
99-0765	Replace EDG SC and RCR Relays with Allen Bradley Model 700-RTC Relays per ESR 9800497
00-1813	Two GE SILs were Evaluated Regarding Potential Raceway Failures
00-0154	ESR 00-00265, MSIV Pit Temperature Increase Effects Evaluated

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors reviewed plant documents to determine correct system lineup, and observed equipment to verify that the systems were correctly aligned while the other train or system was inoperable or out of service. The inspectors verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact mitigating system availability. The inspectors verified the following system alignment and reviewed the associated document:

- Unit 2 residual heat removal system

  -Operating Procedure 2OP-17, Residual Heat Removal System Operating Procedure, Rev 125

In addition, the inspectors performed a detailed walkdown, of the Unit 2 standby gas treatment system, to verify that the system was correctly aligned, and labeled. The power sources and support systems were verified to be available. Review of this system included review of outstanding design issues, maintenance work requests, and temporary modifications. The following documents were reviewed:

-Operating Procedure 2OP-10, Standby Gas Treatment Operating Procedure, Rev 59
-Piping and Instrumentation Diagram (P&ID) F-04073, Sheet (Sht.) 3, Unit 2, Reactor Building Piping Diagram Standby Gas Treatment

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed current Action Requests (ARs), work orders (WOs), and impairments associated with the fire suppression system. The inspectors reviewed the status of on-going surveillance activities to determine whether they were current to support the operability of the fire protection system. In addition, the inspectors observed the fire protection suppression and detection equipment to determine whether any conditions or deficiencies existed which would impair the operability of that equipment. The inspectors toured the following areas important to reactor safety and reviewed the associated document:

- Unit 2 Reactor Building (-17' elevation, 4 areas)

  - Prefire Plan, 2PFP-RB, Reactor Building Prefire Plans, Rev 2

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed activities associated with the cleaning and inspection of the 2A reactor building closed cooling water (RBCCW) heat exchanger. The inspectors reviewed the results of the 2A RBCCW inspection conducted in accordance with Preventive Maintenance Procedure 0PM-HX501, Reactor Building Closed Cooling Water Heat Exchangers Preventive Maintenance Procedure, Rev 6. The inspectors also independently observed the heat exchanger condition from the service water tube side. The inspectors reviewed the inspection results to determine whether the inspection frequencies were adequate to detect degradation prior to loss of heat removal capability below design-basis values. The following document was reviewed:

- WO Package 004789001, Perform Cleaning/Inspection on 2A RBCCW Heat Exchanger

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed licensed operator performance during simulator training for cycle 2001-01 with one crew. This observation included emergency operating procedure and abnormal operating procedure scenarios. The inspectors verified that the licensee's requalification program for licensed operators ensures safe power plant operation by adequately evaluating how well the individual operators and crews have mastered the training objectives, including training on high-risk operator actions. The scenarios tested the operators' ability to respond to a loss of reactor feed water pumps at high powers and high power to flow rod lines; and an anticipated transient without a scram (ATWS) with the suppression pool temperature approaching the heat capacity temperature limit. The inspectors verified consistent clarity and formality of communication, conservative decision-making by the crew, appropriate use of procedures, proper alarm response, and high-risk reactor turbine gauge board manipulations. Group dynamics and supervisory oversight, including the ability to properly identify and implement appropriate TS actions and regulatory reports and notifications, were observed. The following documents were reviewed:

- LOI Core Simulator Scenario, LOT-EOP-031, ATWS With Suppression Pool Temperature Approaching HCTL
- LOCT 00-5, Summary of Comments for Scenario LOT-EOP-031

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

For the equipment issues described in WO packages, condition reports, and ARs listed below, the inspectors reviewed the licensee's implementation of the Maintenance Rule (10 CFR 50.65) 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:

• Unit 2 Standby Liquid Control (SLC) Out-Of-Tolerance Suction Temperatures

  The following documents were reviewed:
  - AR 00025597, Incorrect Setting for the SLC Storage Tank Heater Controller
  - AR 00026806, SLC Suction Piping Heat Trace
  - AR 00026810, SLC Heat Trace
  - TS 3.1.7, Standby Liquid Control (SLC) System Bases
  - TS 3.1.7, Standby Liquid Control (SLC) System
  - Maintenance Rule 2040, Scoping and Performance Criteria, Standby Liquid Control

- Unit 1 1-B21-NO31D-3 Reactor Low Level 1 Slave Trip Unit Gross Failure

  The following documents were reviewed:
  - WO Package 00129398 01, 1-B21-LTS-N031D-3, Trip Card Gross Failure
  - WO Package 00129398 02, 1-B21-LTS-N031D-3, Trip Card Gross Failure
  - Archived Operator Log 3/16-17/01
  - Operating Instruction, 0OI-18, Definition of Instrument Channels and Trip System and Selected Instruments, Rev 47
  - Maintenance Rule Scoping and Performance Criteria, System 2055, Automatic Depressurization
  - Maintenance Rule Event Log Report, 3/21-22/01, 2055 Automatic Depressurization

- Unit 2 Reactor Core Isolation Cooling (RCIC) system Valve 2-E51-F029 Loss of/ Contradictory Position Indication

  The following documents were reviewed:
  - Maintenance Rule Functional Failure Report and Event Log Report dated February 7, 1998 to February 7, 2001
  - Maintenance Rule Functional Failure Definitions, System 2100, Reactor Core Isolation Cooling
  - P&ID D-02529, Unit 2 Reactor Building Reactor Core Isolation Cooling System Piping Diagram

- Unit 1 RCIC Valve 1-E51-F013 Failed Stroke Time Requirements in the Closing Direction

  The following documents were reviewed:
  - Maintenance Rule Functional Failure Report and Event Log Report dated January 14, 1998 to January 14, 2001
  - AR 00027417, 1-E51-F013 Stroke Time

- Unit 2 RCIC Valve 2-E51-F046 Blown Fuses During Operation of Valve

  The following documents were reviewed:
  - AR 00027529, Unit Two RCIC Cooling Water Supply Valve, 2-E51-F046
  - Maintenance Rule Functional Failure Report and Event Log Report dated January 18, 1998 to January 18, 2001

- Unit 2 RCIC Valve 2-E51-F022 Thermally Overloaded During Valve Operation

  The following documents were reviewed:
  - AR 00027529, Repetitive FF ASSD
  - Maintenance Rule Functional Failure Report and Event Log Report dated January 18,1998 to January 18, 2001
  - Maintenance Rule Functional Failure Definitions, System 2100, Reactor Core Isolation Cooling

- Review of Proper Scoping Criteria Based on Safety Significance of System 3070, Condensate System (07/10/2000)

The following document was reviewed:
- Maintenance Rule Scoping and Performance Criteria, System 3070

- Unit 1 Containment Atmospheric Control (CAC) Valve,1-CAC-V7, Exceeded its Valve Opening Stroke Time Limit (07/12/2000)

  The following documents were reviewed:
  - Equipment Database Quality Classification Analysis, System 2070, Component 1-CAC-V7.
  - Maintenance Rule Functional Failure Report and Event Log Report dated July 12, 1998 to July 12, 2000

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For the following work weeks, WO packages, or procedures, the inspectors reviewed the effectiveness of risk assessments performed prior to changes in plant configuration for maintenance activities (planned and emergent), and verified that upon unforseen situations the licensee had taken the necessary steps to plan and control the resultant emergent work activities:

- Unit 2 ‘B’ Recirculation Motor-Generator Set (M-G Set) Trip

  The following documents were reviewed:
  - Annunciator Procedure 2APP-A-07, Annunciator Procedure for Panel A-07, Rev 24
  - Archived Operator Log, Unit 2, 11/15-17/01
  - Administrative Procedure 0AP-25, BNP Integrated Scheduling, Rev 11, Figure 3, Schedule Change Approval Form, Unit 2 MG- Set Trip

- Unit 2 Primary Containment Isolation System Logic Relay Replacement During Online Operation

  The following documents were reviewed:
  - WO Package 00116973, 2-A71-K22 Deenergized
  - Administrative Procedure 0AP-25, BNP Integrated Scheduling, Rev 11

- Unit 2 Residual Heat Removal Valve, 2-E11-F048A, Body Drain Line Crack Repair

  The following documents were reviewed:
  -Administrative Procedure 0AP-25, BNP Integrated Scheduling, Rev 11
  - WO Package 00031419 01, 2-E11-FO48A Disk Nut to Disk Weld

- Unit 1 High Pressure Coolant Injection (HPCI) System Work Week 39 (9/18/2000)

The following documents were reviewed:
- BNP Risk Profile - Week 39
- BNP1 Equipment Out of Service Schedule Risk Profile - Week 39
- Progress Status Report Week 39

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

.1 Unit 2 ‘B’ Recirculation Motor-Generator (M-G) Set Trip

a. Inspection Scope

On January 15 with Unit 2 at 100 percent RTP the 2B reactor recirculation pump tripped as a result of the loss of the M-G set. The inspectors evaluated personnel performance and confirmed appropriate mitigating actions were performed. Unit 2 reactor power reduced to approximately 60 percent RTP as expected following the reactor recirculation pump trip. The M-G set trip was caused by the failure of one of the outboard exciter brushes and arc-over causing scoring to the outboard collector ring, and a loss of generator excitation. The inspectors evaluated licensee actions following the event and recovery of the reactor recirculation loop. The inspectors reviewed operator logs, plant computer data, and strip charts to determine plant response. The inspectors determined if operator responses were in accordance with procedures and training, and evaluated the occurrence and subsequent personnel response using the significance determination process. An additional downpower from 60 percent RTP to approximately 30 percent RTP was necessary to accommodate the restart of the ‘B’ recirculation pump. The inspectors observed the corrective maintenance planning meeting and briefing, reviewed applicable procedures and work tickets for the various restart attempts. The following documents were reviewed:

- Abnormal Operating Procedure, 2AOP-04.0, Low Core Flow, Rev 8
- General Plant Operating Procedure, 0GP-14, Extended Single Recirculation Loop Operation, Rev 0
- Periodic Test, 0PT-13.1, Reactor Recirculation Jet Pump Operability, Rev 32
- Operating Procedure, 2OP-02, Reactor Recirculation System Operating Procedure, Rev 107

b. Findings

No findings of significance were identified.

.2 Unit 2 Final Feedwater Temperature Reduction

a. Inspection Scope

Personnel performance was evaluated by the inspectors on February 13 during a Unit 2 final feedwater (FW) temperature reduction plant evolution. Reactor FW inlet temperature was reduced approximately 15 degrees while initially at 96 percent RTP by opening the high pressure FW heater bypass valve. Reactor power was maintained less than 100 percent RTP reducing reactor recirculation pump flow.

The inspectors attended the pre-evolution briefings, reviewed General Plant Operating Procedure GP-13, Increasing Unit Capacity At End Of Core Cycle, Rev 9, evaluated the compensatory measures established and considered by operations in the event problems occurred, and observed the evolution.

b. Findings

No findings of significance were identified

.3 Unit 2 Manual Scram Due to Erroneous Turbine Speed Input

a. Inspection Scope

On February 23 Unit 2 power was reduced to begin a planned refueling outage. At 10:20 p.m. the unit was at 37 percent RTP, when the operators noted three turbine bypass valves opening. As a result of the steam flow diversion from the turbine a reverse power signal was received and the turbine tripped. The reverse power trip initiated a primary lockout signal which auto-started all four emergency diesel generators (EDG). The EDGs started but did not load onto their respective buses due to offsite power being available. The operators immediately inserted a manual scram. The scram resulted in a decrease in reactor vessel level to the low level 1 (LL1) scram setpoint of 166 inches. The inspectors' review of the associated transient data revealed that operator action was consistent with procedures, and major plant functions were verified to have occurred as expected. The inspectors observed the site incident investigation team briefings and monitored transient troubleshooting activities. Unit 1 was unaffected by the event and remained at 100 percent RTP. The following documents were reviewed:

- Plant Computer Data
- Operating Instruction, 0OI-.06, Post Trip Review, Rev 9
- AR 00028731, Unit 2 Reactor Manual Scram
- Significant Adverse Condition Report Investigation, AR 28731
- Archived Operator Log, Unit 2, 2/23-24/01
- Annunciator Panel Procedure 2APP-UA-23, Annunciator Procedures for Panel UA-23, Rev 44
- Administrative Procedure 0AP-25, BNP Integrated Scheduling, Rev 12, Figure 3, Schedule Change Approval Form

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk significant mitigating systems listed below to assess as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered as compensating measures; (4) where compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on TS limiting conditions for operations (LCOs) and the risk significance in accordance with the SDP. These reviews were performed for the following:

- Unit 2 Core Spray System Overpressure During Leak Rate Testing

  The following documents were reviewed:
  - AR 00029692, 0PT-20.7B-Incorrect Valve Lineup Sequence
  - Period Test 0PT-20.7B, Pressure Isolation Valve Leak Rate Test in Conjunction with RPV Pressure Test, Rev 8

- Unit 2 Thermal Relief Valve Failures

  The following documents were reviewed:
  - Engineering Procedure 0ENP-16.5, Administration of Safety/Relief Valve Testing Program, Rev 11
  - Operating Instruction 0OI-01.08, Control of Equipment and System Status, Rev 32
  - Periodic Test 0PT-11.0, Safety/Relief Valve Set Pressure and Seat Leakage Test, Rev 17
  - WO Package 00125905 01, Remove/Test 2-E11-F030C Per Pt-11.0
  - WO Package 00126061 01, 2-E11-F025A Has Failed 0PT-11.0
  - WO Package 00125946 01, 2-E11-V20 Failed Relief Valve Testing
  - Part 1 of OMa-1-1987 Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices
  - P&ID, D-02525, Reactor Building Piping Diagram, Residual Heat Removal System Unit 2

- Unit 2 HPCI 2-E41-V8, Turbine Stop Valve Abnormal Operation

  The following document was reviewed:
  - ESR 01-00008, E41 High Pressure Coolant Injection System, Rev 0

- Unit 2 125 VDC Batteries, Performance Issue Due to Recent Voltage Drops

  The following document was reviewed:

  - ESR 01-00013, 125 VDC Batteries and Battery Distribution System

- Operability Assessment of AR 00029810, 480V FF, Repetitive FF, and Exceeding Performance Criteria, involving 2XD and 2XM Feeder Circuit Breakers

  The following document was reviewed:
  - Operating Instruction 0OI-50.4, 4160V Emergency Bus E-4 Electrical Load List, Revision 14

- Operability Assessment of Primary Containment Liner Test Channel, Test Port Configuration for Unit 1 and Unit 2

  The following documents were reviewed:
  - AR 00028926, Plugged Test Channels In Drywell and Torus
  - UFSAR, Section 3.1.2.2.7.2, Criterion 16- Containment Design, Compliance
  - Specification For Containment Structure Steel Liners, Specification Number 015-001, Rev 4
  - Brunswick Preliminary Operability Assessment, dated March 2, 2001
  - Drawing- FP 9527-01 1017, Bottom Test Channel
  - Drawing- FP 9527-01 1147, Drywell Test Channels 0 degrees to 360 degrees
  - ESR 01-00115, Primary Containment (Inc. Liner & Penetrations), Rev 0

b. Findings

The inspectors determined that an unrecognized increase in risk existed due to the inoperability of two safety-related 480 volt (V) breaker overcurrent trip devices over the past three years. This issue was of very low safety significance (Green) based on the small probability of a bus fault actually occurring. Three years was based on the six year breaker maintenance periodicity, the fact that the breakers had not been checked for six years, and application of the industry standard that assumed the breaker protective feature failed in half of the six year period.

On March 21 the inspectors reviewed AR 00029810, 480V FF, Repetitive FF, and Exceeding Performance Criteria, and questioned the past operability of the 480V breakers discussed in the AR. The two 480 V feeder breakers to motor control centers (MCCs) 2XD and 2XM that were installed in and supplied by the Unit 2 480V emergency bus substation E-8 failed overcurrent trip tests. The overcurrent trip devices detected an overcurrent condition but the magnetic latch plunger did not actuate to trip and unlatch the breaker to the open position. With the overcurrent trip features not working in the two feeder breakers a fault on the busses or wiring fed by those breakers would not be isolated as close to the fault as possible and would therefore cause the E-8 bus supply breaker to trip open due to the fault overcurrent being propagated and sensed at that breaker. This would result in the loss of the entire E-8 substation and the loss of EDG 4. The E-8 bus supplied power to the Unit 2, division II, train ‘B’ accident mitigating safety-related equipment. The following systems were affected: core spray, residual heat removal, standby liquid control, EDG 4, 250V battery charger, and service water.

The inoperability of the overcurrent trip devices is more than minor because the degraded condition had a credible impact on safety in that if a fault occurred on the 2XD and 2XM MCCs a loss of the division II accident mitigating systems would have occurred. The degraded condition affected both the initiating event and mitigating system cornerstones and was reviewed using the Reactor Safety SDP. Phase 2 and phase 3 assessments were performed because the safety function of the breaker overcurrent trip protective features would not have functioned, which resulted in an increased likelihood that the E-8 emergency bus, and several division II mitigating systems could be lost. The phase 2 and phase 3 SDP review concluded that this issue was of very low safety significance (Green) based on the small probability of a bus fault actually occurring. No violations of NRC requirements were identified because the licensee met regulatory requirements associated with maintenance and quality controls of the breaker components.

Additionally, the licensee initiated a significant root cause investigation of the overcurrent trip device failures that included a review of current maintenance practices for breakers of this type and an examination of the failed trip devices. The licensee evaluated the likelihood of other breakers in the plant, similar in function, having the same problem and determined based on past testing results that no additional testing was required at that time.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of operator workarounds. The inspectors reviewed the workarounds on reliability, availability, and potential mis-operations of the systems involved. The inspectors reviewed whether the operator workarounds on Unit 1 and Unit 2 could increase an initiating event frequency or could affect multiple mitigating systems. The inspectors also reviewed the cumulative effects of operator workarounds on operator correct and timely response to plant transients and accidents. The following item was reviewed:

- Workarounds dated Tuesday, March 6, 2001, on Unit 1 and Unit 2.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors evaluated six modifications to verify the correct implementation of licensee procedure EGR-NGGC-0005, Engineering Service Requests (ESR), Rev 13. The inspectors verified that: system energy requirements could be supplied by supporting systems; materials/replacement components were environmentally qualified; replacement components were seismically qualified; code and safety classification of replacement system, structures, and components were consistent with system design bases; the modification design assumptions were acceptable; post-modification testing verified system operability; failure modes were bounded by existing analyses; and that new procedures or procedure changes had been initiated. The inspectors also reviewed applicable sections of the UFSAR, site drawings, supporting analyses, calculations, TS, and procedures to ensure they were correctly revised.

The inspectors also reviewed eight program assessment reports and self-assessments to confirm that the licensee was identifying modification-related issues and initiating actions to resolve concerns.

Modifications Reviewed

ESR 98-00329	Main Steam Isolation Valve Upgrade
ESR 99-00241	Drill holes in discs of RHR minimum flow line isolation valves to alleviate pressure locking concerns (ESR 99-00166) [USQD not required]
ESR 99-00309	Unit 1 Drywell Pressure Sensing Line Slope Changes
ESR 00-00133	Replacement Diesel Generator Potential Transformer (also ESR 00-00131)
ESR 00-00118	Main Power Transformer Replacement - Bushings
ESR 99-00186	Evaluate Impact of Reduced HPCI Minimum Flow Due to 2-E41-F012 Fouling

Program Assessment Documents Reviewed

B-ES-99-02, BNP Engineering Programs Assessment July 27, 1999

RR-SPP-00-01, Round Robin Special Process Assessment at Harris, Brunswick, and Robinson Nuclear Plant, December 6, 2000

B-ES-99-01, BNP Engineering Outage Preparations Assessment, March 24, 1999

RR-ES-00-01, Round Robin Engineering Functional Area Assessment at Brunswick and Robinson Nuclear Plants, November 1, 2000

B-ES-99-03, Brunswick Engineering Inservice Inspection/Testing, Flow Accelerated Corrosion and Motor Operated Valve Programs Assessment, December 23, 1999

CES AR 10283, Engineering Products Review (EPR), December 13, 2000

Self-Assessment (9816) LIC 99-01, Quality of Safety Reviews Performed In accordance with REG-NGGC-0002, Rev. 2, Followup Assessment, August 9-September 11, 2000

LIC 99-01,Quality of Safety Reviews Performed In accordance with REG-NGGC-0002, Rev. 2, August 9-13, 1999

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the post-maintenance tests and the associated documents listed below, the inspectors reviewed the test procedure and witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed; and whether the test demonstrated that the affected equipment was capable of performing it's intended function and was operable in accordance with TS:

- Unit 2 2-E41-V8, HPCI Turbine Stop Valve

  - Operating Procedure, 2OP-19, High Pressure Coolant Injection System, Rev 94

- Unit 2 Residual Heat Removal System Thermal Relief Valve Failures (IST)

  - Plant Program Procedure, 0PLP-20, Post Maintenance Testing Program, Rev 23

- Unit 1 1-B21-N031D-3 Low Level 1 Slave Trip Unit Gross Failure

  - Archived Operator Log, Unit 1 dated 3/16-17/01
  - Plant Program Procedure, 0PLP-20, Post Maintenance Testing Program, Rev 23
  - WO Package 00129398 01, 1-B21-LTS-N031D-3, Trip Card Gross Failure
  - WO Package 00129398 02, 1-B21-LTS-N031D-3, Trip Card Gross Failure
  - Operating Instruction, 0OI-18, Definition of Instrument Channels and Trip System and Selected Instruments, Rev 47
  - Maintenance Rule Scoping and Performance Criteria, System 2055, Automatic Depressurization
  - Maintenance Rule Event Log Report, 3/21-22/01, 2055 Automatic Depressurization
  - Core Spray System Elementary Diagram, 1FP-05889, Sh 2
  - Auto Depressurization System. Elementary Diagram, 1-FP-05887, Sh 2
  - Auto Depressurization System Elementary Diagram, 1-FF-05887, Sh 3

- Emergency Diesel Generator Number 1, Auxiliary Lubricating Oil Pump Replacement

  - WO Package 00078632-03, 2-LO-Aux-Pmp-1 Aux Lube Oil Pump

- Unit 2 Main Steam Isolation Valve Outboard Isolation Logic Relay, 2-A71-K22, replacement

- WO Package 00116973, 2-A71-K22 Deenergized

- Unit 2 Standby Liquid Control Valve 2-C41-V19 Seat Leakage Repair

  - WO Package 00030972, 2-C41-V19 Leaks By The Seat Found During PT-6.1
  -Periodic Test 0PT-6.1, Standby Liquid Control System Operability Test, Revision 55

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities to ensure that the licensee considered risk in developing outage schedules; adhered to administrative risk reduction methodologies developed to control plant configuration; developed mitigation strategies to losses of key safety functions; and adhered to operating license and TS requirements that ensure defense-in-depth. The following specific areas were reviewed:

1. Review of Outage Plan. Prior to the outage, the inspectors reviewed the licensee's outage risk control plan, attended the risk briefings, and verified that the licensee appropriately considered risk, industry experience and previous site specific problems. The inspectors confirmed that the licensee had contingency actions for losses of key safety functions and that the licensee maintained key safety function status and controls continuously throughout the outage. The inspectors reviewed the Unit 2 outage risk assessment, B215R1 Refueling Outage Safe Shutdown Risk Assessment.

2. Monitoring of Shutdown Activities. The inspectors verified that TS cooldown restrictions were met in accordance with Periodic Test 2PT-01.7, Heatup/Cooldown Monitoring, Rev 3. The following document was reviewed:

   - Special Process Procedure 0SPP-RPV501, Reactor Vessel Disassembly, Rev 28

3. Outage Configuration Management. The inspectors verified that the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable TS when risk significant equipment was removed from service. The inspectors verified that configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage risk control plan. The inspectors verified that control room operators were cognizant of plant configuration.

   - Administrative Procedure 0AP-022, BNP Outage Risk Management, Rev 7

4. Clearance Activities. The inspectors verified that clearance tags were properly hung and that associated equipment was appropriately configured to support clearance functions on a random sampling basis.

5. Reactor Coolant System Instrumentation. The inspectors verified that reactor coolant system pressure, level, and temperature instruments were installed and configured to provide accurate indication; and that appropriate instrumentation calibrations were performed as necessary based on plant conditions.

6. Electrical Power. The inspectors verified that the status and configurations of electrical systems met TS requirements and the licensee's outage risk control plan. The inspectors verified that switchyard activities were controlled commensurate with safety and were consistent with the licensee's outage risk control plan assumptions. The following documents were reviewed:

   - Operating Instruction 0OP-50.13, 4160V Bus Common B Electrical Load List, Rev 9
   - Operating Instruction 0OI-50.7, 4160V Bus 1C Electrical Load List, Rev 3
   - Abnormal Operating Procedure 0AOP-36.1, Loss of any 4160V Buses or 480V E-Buses, Rev 20

7. Decay Heat Removal (DHR) System Monitoring. The inspectors observed DHR parameters to verify that the systems were properly functioning.

8. Spent Fuel Pool Cooling System Operation. The inspectors verified that outage work did not impact the ability of the operations staff to operate the spent fuel pool cooling system during and after core offload.

9. Inventory Control. The inspectors verified that flow paths, configurations, and alternative means for inventory addition were consistent and maintained with the outage risk plan. The inspectors verified that reactor vessel inventory controls were adequate to prevent inventory loss.

10. Reactivity Control. The inspectors verified that proper control of reactivity was maintained in accordance with the TS. Potential reactivity changes were identified in the outage risk plan and were verified to have proper controls.

11. Refueling Activities The inspectors verified that fuel handling operations were performed in accordance with TS and fuel handling procedures. The inspectors verified the entire core fuel bundles were in the correct position and orientation. The inspectors observed several fuel handling moves in the vessel area and spent fuel pool area. The following documents were reviewed:

   - General Plant Operating Procedure 0GP-06, Cold Shutdown to Refueling (Head Unbolted), Rev 19
   - Fuel Handling Procedure 0FH-11N, Control Rod Shuffle, Rev 16
   - Fuel Handling Procedure 0FH-11, Refueling, Rev 69
   - Special Process Procedure 0SPP-RPV502, Reactor Vessel Reassembly, Rev 30

- Engineering Procedure 0ENP-24.13, Core Verification, Rev 12

12. Monitoring of Heatup and Startup Activities. The inspectors verified that TS, license conditions, commitments, and administrative procedure prerequisites for mode changes were met and for changing plant configurations. The inspectors performed a walkdown of primary containment prior to reactor startup to verify that debris had not been left which could affect performance of the containment torus. The inspectors observed reactor startup, the approach to criticality, and major portions of the power ascension. The following documents were reviewed:

    - General Plant Operating Procedure 0GP-02, Approach to Criticality and Pressurization of the Reactor, Rev 70
    - General Plant Operating Procedure 0GP-03, Unit Startup and Synchronization, Rev 53
    - General Plant Operating Procedure 0GP-04, Increasing Turbine Load to Rated Power, Rev 49
    - Administrative Instruction 0AI-127, Primary Containment Inspection and Closeout, Rev 11

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors examined test procedures and/or witnessed testing, and reviewed test records against the UFSAR and TS to determine whether the scope of testing adequately demonstrated that the affected equipment was capable of performing it's intended function and was operable in accordance with TS requirements. The following tests and associated documents were reviewed:

- Maintenance Surveillance Test 1MST-SW12Q, SW Diesel Generator Cooling Water Supply Low Pressure Inst Cal and Functional Test, Rev 6

    - TS 3.7.2 SW System and Ultimate Heat Sink
    - TS 5.5.6 Inservice Testing Program
    - TS SR 3.7.2.4
    - TS SR 5.5.6
    - Limiting Condition for Operation (LCO) A1-01-51
    - LCO A1-01-57
    - LL-09204 Shts 65 and 67, Units No. 1 & 2 - MCC "DGA"-COMPT E00, Diesel Generator No. 1 Jacket Wtr Vlv 1-SW-V Control Wiring Diagram
    - Piping Diagram, D-02274, Diesel Generator Service Water & Demineralized Water System, Units No. 1 & 2

- Unit 1 Periodic Test 0PT-8.2.2c, LPCI/RHR System Operability Test-Loop A,
- Rev 49

- WO Package 00118917-01
- WO Package 00109380-01
- AR 00028111, 1-E11-SV-F080A Failed to Close During Testing (MR FF)
- AR 00028449, RHR Sample Valve Operability
- TS 3.6.1.3 Primary Containment Isolation Valves (PCIVs)
- TRM Appendix D, TRM Table 3.6.1.3-2, Power Operated and Automatic PCIVs
- Engineering Procedure 0ENP-16.1, IST Pump Valve Data, Rev 21

• Unit 2 2-E11-F028A Torus Discharge Isolation Valve Test Failure

  - Periodic Test 0PT-08.2.2c, LPCI/RHR System Operability Test-Loop A, Rev 50
  - Periodic Test 0PT-20.3, Local Leak Rate Testing, Rev 51
  - Engineering Procedure 0ENP-16.4, Use of Leak Test Equipment, Rev 17
  - Engineering Procedure 0ENP-16.8, Containment Leakage Tracking, Rev 18

• Maintenance Surveillance Test, Unit 1, 1MST-PCIS21R, PCIS Reactor Water LL2 And LL3 Div I Inst Chan Cal And Func Test

  -Maintenance Surveillance Test 0MST-PCIS41R, PCIS Group I Logic System Functional Test, Rev 6.
  - FP-55109, Elem. Diagram Nuclear Steam Supply Shutoff System,

• Unit 2 Local Leak Rate Surveillance Test on 2-G31-F001, Reactor Water Cleanup system supply line primary containment isolation valve

  -Periodic Test 0PT-20.3, Local Leak Rate Testing, Rev 51

• Maintenance Surveillance Test, Unit 1, 0MST-PCIS38R, PCIS Group I (MSIV) Inst Chan Response Time Test, Rev 2

  -WO Package 00046540, Perform 0MST-PCIS38R on Unit 1

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The inspector conducted an in-office review of changes to the Radiological Emergency Plan (REP), as contained in Revisions 53 through 57, against the requirements of 10 CFR 50.54(q) to determine whether any of the changes decreased REP effectiveness. Revision 57 included minor editorial (nonsubstantive) modifications to the EALs.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

.1 Plant Walk Downs

a. Inspection Scope

The inspectors evaluated the licensee's access controls for high radiation areas. 10 CFR Part 20, Standards For Protection Against Radiation; Technical Specification, Section 5.7, High Radiation Area; and licensee procedures specified the licensee's requirements for controlling access and work in high radiation areas. Licensee procedures providing staff guidance included: 0E&RC - 0040, Administrative Controls For High Radiation Areas, Locked High Radiation Areas, and Very High radiation Areas; HPS-NGGC-0003, Radiological Posting, Labeling, and Surveys; and HPS-NGGC-0008, Performing Work in Radiation Control Areas.

The inspectors reviewed radiation surveys, evaluated radiological postings and barricades, and verified locked high radiation areas were properly secured.

The inspectors interviewed cognizant personnel, reviewed licensee procedures and walked down the perimeter of three radiologically significant areas (Spent Fuel Pools, Traversing In-core Probe areas, and an Auxiliary Spent Fuel Pool Cooling System) with a radiation survey meter to determine whether prescribed radiological postings, Radiation Work Permits, procedural and engineering controls were adequate and in place.

b. Findings

No findings of significance were identified.

.2 Radiation Work Permits (RWP)

a. Inspection Scope

Routine and special RWPs for work in radiologically significant areas were reviewed to evaluate whether work control instructions, for various radiological conditions, addressed sound radiation protection measures. The licensee's RWP requirements were documented in 0E&RC - 0230, Issue and Use of Radiation Work Permit.

The inspectors evaluated radiation worker compliance with RWP requirements while performing outage preparation work.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

Title 10 CFR Part 19.12 requires licensees provide radiation protection training to occupational radiation workers. The inspectors evaluated the adequacy of computer based site access training, radiation worker training, and respirator training and evaluated the tests and test results.

The inspectors interviewed occupational radiation workers prior to their entry into the licensee's radiologically controlled area (RCA). The interviews evaluated the occupational radiation workers knowledge of radiation control topics. Topics included knowledge of their radiation work permits (RWPs); actions following electronic pocket dosimeter alarms; definitions of radiation, high radiation, and very high radiation areas; requirements for entering high radiation areas; and employee requirements for personnel contamination monitoring. Evaluations of radiation worker performance during jobs in progress were also made during the inspection.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician (RPT) Proficiency

a. Inspection Scope

Technical Specification 5.3, Unit Staff Qualifications, specified the qualification requirements for RPTs. The inspectors evaluated licensee certification interviews and procedures used to qualify returning contract health physics technicians. The inspectors evaluated the adequacy of a control rod drive mockup demonstration and refresher training for health physicists for the control rod change out during the outage. The content of a lessons learned discussion meeting was also evaluated and the performance of RPTs was evaluated during jobs in progress.

b. Findings

No findings of significance were identified.

.5 Problem Identification and Resolution

a. Inspection Scope

Adverse condition reports and trending data related to radiation protection activities and radiological control deficiencies, initiated since the last radiation protection inspection, were evaluated for thoroughness of corrective actions.

b. Findings

No findings of significance were identified.

2OS2 As Low As Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

10 CFR Part 20.1101, and licensee procedures ADM-NGGC-0105, ALARA Planning; 0E&RC - 4100, ALARA Program; and 0E&RC - 4105, E&RC ALARA Planning, required the licensee use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses ALARA.

The inspectors evaluated the licensee's final ALARA preparations for the up-coming outage including preparations to install permanent shielding in the Unit 2 drywell during the outage. Information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities were reviewed to assess current performance and exposure challenges.

Outage and annual dose assessments were reviewed to verify the licensee was identifying collective dose problems in a corrective action system. Radiological work planning and the licensee's ability to estimate collective dose goals and track collective dose were reviewed.

The licensee's dose controls for individual declared pregnant workers and their exposures were determined.

Problem identification measures were reviewed to verify that problems were properly identified, characterized, prioritized, entered into the licensee's corrective action program, and resolved in a timely manner.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

Plant radiation systems and calibration requirements for plant radiation monitors are described in implementing procedures required by Section 11 of the UFSAR, and the Offsite Dose Calculation Manual. Calibration requirements for portable radiation survey instruments are required to be in written procedures in accordance with TS Section 5.4, Procedures. Most of the portable radiation monitoring equipment was calibrated in an offsite calibration laboratory that was not included in this inspection.

Availability, storage, and operability of portable radiation monitoring instruments for use in various radiation fields were evaluated. Instrument source check data was reviewed for selected portable radiation monitoring instruments including: ion chambers (R02, R02A, and R020), hand-held friskers (RM-14), Geiger-Mueller detectors (teletectors), and survey meters (micro-Rad meter). The inspectors also reviewed the following procedures: Standard Procedure HPS-NGGC-0005, Calibration of Portable Radiation/Contamination/Air Sampling Survey Instruments, Rev 1; and Environmental & Radiation Control Procedure 0E&RC-0320, Calibration and Use of Eberline RM-14 Radiation Monitor, Rev 20. In addition, the inspectors reviewed and discussed with licensee representatives the following ARs, relating to problems associated with the instruments since April 2000: AR 19491, AR 21292, AR 22831, AR 22881, AR 25393, and AR 27021.

The licensee's respiratory protection program for operations and health physics staff members potentially required to use self-contained breathing apparatus (SCBA) equipment was reviewed and evaluated for implementation per UFSAR Section 12.5; Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection, Rev 1; 10 CFR 20.1703; and licensee procedures. The inspectors reviewed Self-Assessment Report 9920, Respiratory Protection Program, conducted in November 2000. The inspectors observed the SCBA charging station facilities and associated equipment and verified availability of equipment and replacement bottles within established storage locations, including the Emergency Operations Facility and the control room. The following procedures were reviewed and discussed:

- Environmental & Radiation Control Procedure 0E&RC-0220, Respiratory Protection Program, Rev 39
- Fire Protection Procedure 0FPP-039, SCBA Use and Maintenance, Rev 6
- Fire Protection Procedure 0FPP-038, Operation of the SCBA Refill System, Rev 2
- Environmental & Radiation Control Procedure 0E&RC-0221, Cleaning, Maintenance, and Leak Testing of Respiratory Equipment, Rev 22
- Standard Procedure HPS-NGGC-0006, Qualitative Fit Testing, Rev 1
- Plant Emergency Procedure 0PEP-04.6, Radiological Emergency Kit Inventories, Rev 21

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

For the RCS Leakage PI, a sample of ARs, engineering databases, and operator's logs were reviewed. The inspectors reviewed the RCS Leakage for the period from April 2000 to January 2001 and the associated documents:

- AR 00020576, RCS Leakage PI Database Errors
- AR 00022803, NAS B-SP-00-02-I1, RCS Leakage PI Retrieval/Reporting Deficiencies
- RCS database
- NEI 99-02 Regulatory Assessment Performance Indicator Guideline, March 2000, Rev 0
- Operating Instruction 1OI-03.1, Control Operator Daily Surveillance Report, Rev 68
- 1OI-03.1, Attachment 1, March 11, 2000
- 1OI-03.1, Attachment 1, Oct. 21, 2000
- 1OI-03.1, Attachment 1, May 13, 2000
- 2OI-03.2, Attachment 1, Jan 29, 2000
- 2OI-03.2, Attachment 1, Oct. 14, 2000
- 2OI-03.2, Attachment 1, May 6, 2000

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 Unit 2 Reactor Recirculation Motor-Generator Set Trip

a. Inspection Scope

The inspectors evaluated a January 15 event in which the Unit 2, 2B reactor recirculation pump tripped, as a result of the loss of the M-G set, while the unit was operating at 100 percent RTP. The inspectors reviewed the event for plant status and mitigating actions. As a result of the M-G set trip, Unit 2 reactor plant power reduced to approximately 60 percent RTP as expected. The inspectors evaluated licensee actions following the event and reviewed the following document:

- Abnormal Operating Procedure, 2AOP-04.0, Low Core Flow, Rev 8

b. Findings

No findings of significance were identified.

.2 Weatherspoon Offsite Feeder Trip and Downpower to 70 Percent

a. Inspection Scope

On January 21 the licensee reduced power on Unit 1 from 100 percent to 70 percent consequent to the trip of the Weatherspoon offsite feeder. This feeder was one of four offsite distribution lines which supplied the site 230kV alternating current (ac) distribution system for Unit 1. The inspectors reviewed the licensee actions. Power reduction was completed consistent with General Procedure 0GP-12, Power Changes, Rev 16. After restoration of the distribution line, the licensee attempted to restore the Weatherspoon line. During this activity the licensee identified the failure to close of one of the two power control breakers (PCB). The Weatherspoon line was initially restored through the other PCB and returned to 100 percent on January 22. The inspectors evaluated licensee actions following the event and reviewed the following document:

- AR 00027673, Weatherspoon Line Lost

b. Findings

No findings of significance were identified.

.3 (Closed) Licensee Event Report (LER) 50-325(324)/00-001-00: Loss of Offsite Power During Refuel Outage. The inspectors reviewed the circumstances associated with the event and documented the inspection findings in NRC Integrated Inspection Report Nos. 50-325/00-02 and 50-324/00-02 dated April 25, 2000. The corrective actions for this event, which included implementing human performance/human factors standards into applicable transmission department procedures, processes, and practices, were adequate.

.4 (Closed) LER 50-325(324)/00-002-00: Control Room Emergency Ventilation System Actuation During Chlorination System Venting. This LER was a minor issue and was closed. No findings of significance were identified. This issue is in the licensee's corrective action program as AR 00019134, Control Building Isolation.

4OA5 Other

(Closed) Unresolved Item (URI) 50-325/324 00-04-02: Brunswick Cable Submergence Issues. The NRC staff reviewed the long term cable submergence issue at the Brunswick facility and determined, that industry cable failures cannot be clearly tied to long term cable submergence concerns associated with any cable degradation, since no general common mode failures of cables has to date, been identified or evaluated.

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. J. Keenan, Site Vice President, and other members of licensee management at the conclusion of the inspection on April 6. 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.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

A. Brittain, Manager Security
K. Crocker, Superintendent Environmental and Radiation Controls (E&RC) ALARA
D. DiCello, Manager Regulatory Affairs
W. Dorman, Manager Nuclear Assessment
J. Franke, Manager Brunswick Engineering Support Section
N. Gannon, Plant General Manager
J. Gawron, Training Manager
S. Hamilton, Manager E&RC
D. Holder, Superintendent E&RC Programs
J. Keenan, Site Vice President
J. Lyash, Director of Site Operations
W. Noll, Manager Operations
E. O'Neil, Manager Site Support Services
E. Quidley, Manager Maintenance
H. Wall, Manager Outage and Scheduling

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed During This Inspection

None

Closed

50-325(324)/00-001-00	LER	Loss of Offsite Power During Refuel Outage (4OA3)
50-325(324)/00-002-00	LER	Control Room Emergency Ventilation System Actuation During Chlorination System Venting (4OA3)
50-325(324)/00-04-02	URI	Brunswick Cable Submergence Issues (4OA5)

Discussed

None

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:

Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

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.