



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

April 28, 2003

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 INTEGRATED INSPECTION
REPORT NOS. 50-325/03-03 AND 50-324/03-03**

Dear Mr. Keenan:

On March 29, 2003, the Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Units 1 and 2 facilities. The enclosed integrated inspection report documents the inspection findings, which were discussed on March 28, 2003, 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, no findings of significance were identified.

In accordance with 10CFR 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/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Paul E. Fredrickson, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 50-325, 324/03-03
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-325, 50-324

License Nos: DPR-71, DPR-62

Report No: 50-325/03-03 and 50-324/03-03

Licensee: Carolina Power and Light

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road SE
Southport, NC 28461

Dates: December 29, 2002 - March 29, 2003

Inspectors: J. Austin, Resident Inspector
R. Holbrook, Senior Resident Inspector Browns Ferry
J. Reece, Resident Inspector Watts Bar
G. MacDonald, Senior Project Engineer (Sections, 1R04.2, 1R05,
1R19)
R. Hagar, Resident Inspector Shearon Harris (Section 1R22)
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A. Nielsen, Radiation Specialist (Section 2OS1)

Approved by: Paul Fredrickson, Chief,
Reactor Projects Branch 4
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000325/2003-003, 05000324/2003-003; Carolina Power and Light; on 12/29/02 - 03/29/03; Brunswick Steam Electric Plant, Units 1 and 2; integrated inspection report.

The report covered a three month period of inspection by resident inspectors, regional radiation specialists, a senior project manager, a senior project engineer and a regional reactor inspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the report period operating at full power. The unit operated at full power for the entire report period with the following exceptions. On January 12, Unit 1 experienced an automatic reactor scram from full power that was caused by a trip of the 1B reactor feed pump due to low oil pressure. The reactor was restarted the same day and reached full power on January 16. On January 17, power was reduced to 78 percent for rod improvement and steam leak repairs. On March 1, power was reduced to 54 percent for main condenser waterbox repairs.

Unit 2 began the report period operating at full power. On February 17, the 2A reactor recirculation pump tripped due to a trip of the motor generator set on a loss of excitation. Unit 2 operated in single loop operation at approximately 40 percent reactor power until the 2A motor generator set was repaired. The unit returned to two loop operation following the repairs and achieved full power on February 18. On March 7, Unit 2 commenced a power reduction and shutdown for Refueling Outage B216R1. Unit 2 remained in the refueling outage throughout the remainder of the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

.1 Partial Walkdown

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 conducted a review to verify that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact mitigating system availability. Inspector observations and licensee performance were compared to Procedure CAP-NGGC-0200, Corrective Action Program. The inspectors verified the following three system alignments:

- 2OP-18, Core Spray System Operating Procedure, while risk for the shutdown unit was increased to yellow
- 0OP-50.1, Diesel Generator Emergency Power System Operating Procedure, during Unit 2 switchyard work activities
- 2OP-17, Residual Heat Removal System Operating Procedure, following maintenance activities on the system

.2 Complete Walkdown

The inspectors performed a complete walkdown, of the accessible portions of the Unit 1 service water (SW) system. The inspectors focused on verifying adequate material condition and correct system alignment. The inspectors reviewed the Technical Specifications (TS), operating procedures, and the Updated Final Safety Analysis Report (UFSAR). The inspectors held discussions with the SW system engineer to review system status including a review of open system modifications, temporary modifications, open work requests for the system, operator work-arounds, and open adverse conditions or action requests (ARs) to ensure that the impact on equipment functionality was properly evaluated. The inspectors used the procedures and other documents listed below to verify system alignments:

- UFSAR Section 9.2.1
- Operating Procedure (OP), 1OP-43, Unit 1 Service Water System Operating Procedure
- TS Section 3.7.2, Service Water (SW) System and Ultimate Heat Sink (UHS)

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed current ARs, and impairments associated with the fire suppression system. The inspectors reviewed the status of ongoing surveillance activities to verify that they were current to support the operability of the fire protection system. In addition, the inspectors observed the fire 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 documents:

- Fire areas DG-1, DG-2, DG-3, DG-4 and DG-5, Diesel Generator Building basement and engine cells--Prefire Plan 0PFP-DG, Diesel Generator Building Prefire Plans
- Fire area SW1-1, Service Water Building--Prefire Plan 0PFP-PBAA, Service Water Building Prefire Plans

Additional documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activitiesa. Inspection Scope

The inspectors observed in-process inservice inspection (ISI) work activities during the first outage of the 2nd interval of the 3rd ISI period, and reviewed selected ISI records. The observations and records were reviewed for compliance to the TS and the applicable Code (ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, with no Addenda).

Portions of the following Unit 2 ISI examinations were observed:

- | | | |
|---------------------------|---|--|
| Ultrasonic (UT) | - | Feedwater nozzle inner radius examination for 2B11-RPV-N4A-IRS |
| Visual Examination (VT-3) | - | IVVI examination of feedwater header welds
IVVI examination of core spray piping and nozzles. |

Qualification and certification records for examiners, equipment and consumables, and nondestructive examination (NDE) procedures for the above ISI examination activities were reviewed. In addition, a sample of ISI issues in the licensee's corrective action program were reviewed to ensure that they met the requirements of Procedure CAP-NGGC-0200, Corrective Action Program. The following records/documents were reviewed:

- NDE examiner/QC inspector qualification certification and visual acuity records:

<u>Examiner</u>	<u>Method-Level</u>
JA	UT-II, PDI UT-1,-2,-3,-5,-8, IGSCC
JD	UT-III, PDI UT-1,-2,-3,-5,-8,-10, IGSCC
DG	UT-II, PDI UT-1,-2,-3,-5,-10
AJ	UT-II,
TB	VT-III, VT-1, VT-2, VT-3
- Ultrasonic examination records:
 - FW nozzle inner radius 2B11-RPV-N4A-IRS
 - FW nozzle inner radius 2B11-RPV-N4B-IRS
 - FW nozzle inner radius 2B11-RPV-N4C-IRS
 - FW nozzle inner radius 2B11-RPV-N4D-IRS
 - Recirculation system inlet nozzle to shell weld 2B11-RPV-N2E
- Work Order (WO) Package 191267-01 for the Code repair of a through-wall indication in the main service water supply pipe to the residual heat removal (RHR) SW pumps.
- AR 88097, Deferral of the UT inspection of inlet nozzle N2D until the next refueling outage due to higher than expected radiation levels.

- AR 88210, PRR (Procedure Revision Request) for the revision of Procedure OSP-03-001 to correct inconsistency in allowed UT cable length.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

For the equipment issues described in the ARs listed below, the inspectors reviewed the licensee's implementation of the Maintenance Rule (MR)(10 CFR 50.65) with respect to the characterization of failures, the appropriateness of the associated MR 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. The inspectors also reviewed operations logs and licensee event reports to verify unavailability times of components and systems if applicable. Licensee performance was compared to the requirements of Procedure ADM-NGG-0101, Maintenance Rule Program. The inspectors verified that the licensee had identified and resolved deficiencies in accordance with Procedure CAP-NGGC-0200, Corrective Action Program.

- AR 76076, Unit 2 high pressure coolant injection (HPCI) loss of safety function due to equipment failure and isolation
- AR 76664, Expert panel review of repeat functional failures of Unit 2, 2-CAC-AT-4410

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments for the following plant configurations. The inspectors reviewed the licensee's implementation of 10 CFR 50.65 (a)(4) requirements during scheduled and emergent maintenance activities using OAP-025, BNP Integrated Scheduling and Technical Requirements Manual (TRM) 5.5.13, Configuration Risk Management Program. The inspectors reviewed the effectiveness of licensee actions to plan and control scheduled work to minimize overall plant risk. The inspectors reviewed the applicable plant risk profiles, work week schedules, and maintenance work requests associated with the following out of service equipment:

- Unit 2 0MST-APRM20Q, Average power range monitor (APRM) flow-bias flow units C&D channel calibration during DG #3 outage
- WO 00351534-01, 2-DG1-ENG, exhaust bellows inspection

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Evolutions

.1 Unit 1 Scram Following a Trip of Reactor Feedwater Pump 1B

a. Inspection Scope

The inspectors reviewed personnel performance during part of the Unit 1 startup activities following a scram on January 12. The scram was due to a low reactor water level that resulted from a trip of the 1B reactor feedwater pump. The cause of the reactor feedwater pump trip was low lube oil pressure. The in-service lube oil pump tripped when a motor starter relay failed and the standby lube oil pump failed to supply adequate pressure prior to the feedwater pump trip. The inspectors reviewed Procedures, 0-OI-01.2, Shift Routines and Operating Practices, 0GP-01, Pre-startup Checklist, 0GP-04, Increasing Turbine Load to Rated Power, and 0GP-10, Rod Sequence Checkoff Sheets, to verify operator performance, procedure usage, equipment checks; and TS required activities, including control rod coupling integrity checks, and control rod reed switch position indications met regulatory requirements. The inspectors reviewed control room formality, communications, shift manning, and team work to verify that they met procedure requirements. Additional information is documented in Section 4OA3.1 and the associated licensee event report (LER) is closed in Section 4OA3.4.

b. Findings

No findings of significance were identified.

.2 Unit 2A Recirculation Motor-Generator (M-G) Set Trip

a. Inspection Scope

On February 16 with Unit 2 operating at full power, the 2A reactor recirculation pump tripped as a result of the trip of the M-G set. Unit 2 reactor power reduced to approximately 40 percent reactor thermal power (RTP) following the reactor recirculation pump trip. The M-G set trip was caused by the failure of a circuit board in the voltage regulator. The circuit board had several damaged (over heated) resistors which caused the loss of excitation and the reactor recirculation M-G set field breaker to trip. The inspectors evaluated personnel performance to confirm that appropriate mitigating actions were performed. The inspectors reviewed control room logs, parameter recorders, and discussed plant response with personnel that were onsite during the event to verify performance was as required by procedure and equipment response was as described in design basis documents. The inspectors compared operator performance to the requirements in procedure 0OI-01.02, Shift Routines and Operating practices, and abnormal operating procedure 2AOP-04.0, Low Core flow. The inspectors evaluated licensee actions following the event and recovery of the reactor recirculation loop.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the two following evaluations affecting risk significant systems or components to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) the justification for continued system operability; (3) whether other existing degraded conditions were considered as compensatory measures; (4) where compensatory measures were involved, the placement, operation and control of the compensatory measures; (5) where continued operability was considered unjustified, the impact on TS limiting condition for operations (LCOs) and the risk significance. Licensee performance was compared to the requirements of 10 CFR 50.59 and Procedure ENG-NGGC-0005, Engineering Change.

- Unit 2 - 50256R0, Storage of temporary lead shielding blankets in the Unit 2 drywell during power operations
- Unit 2 - 01-00112, Injection sealant into packing of safety related valve 2-B32-F031B

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (OWAs)

a. Inspection Scope

The inspectors reviewed the status of OWAs for Units 1 and 2 to determine if the functional capability of the system or operator reliability in responding to an initiating event was affected. The review was to evaluate the effect of the OWA on the operator's ability to implement abnormal or emergency operating procedures during transient or event conditions. The inspectors compared licensee actions to the requirements of Procedure 00I-01.08, Control of Equipment and System Status.

The two OWAs reviewed were:

- OWA-403, Auxiliary Operator or Instrumentation and Control Technician Isolate Three High Pressure Oil Switches Prior to Resetting a Reactor Feedwater Pump Turbine or Starting A Reactor Feedwater Pump Turbine Oil Pump
- OWA-103, Reactor Building to Torus Vacuum Breakers Accumulating Moisture in Valve Bodies

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed a sample of risk significant modifications related to the Unit 2 extended power uprate (EPUR) to verify the plant modifications were in accordance with the licensing and design bases, licensee commitments and the UFSAR. In addition, the inspectors reviewed the licensee's actions to incorporate lessons learned from a similar Unit 1 EPUR conducted in 2002, and industry boiling water reactor power uprate experience. The EPUR startup test plan was reviewed to assess acceptance criteria related to the heat balance calorimetric and alternate power indicators. The design, re-scaling, and calibration of feedwater flow and steam flow instrumentation were reviewed to verify the new higher flow values resulting from the EPUR were within the capability of the equipment. Field walkdowns were performed to assess the status and condition of ongoing installations. Documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

Using the WOs listed below, the inspectors reviewed the test procedure and witnessed the testing and/or reviewed test records to confirm that 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 its intended function and was operable in accordance with TS requirements. The inspectors verified licensee actions were in accordance with Procedure 0PLP-20, Post-Maintenance Testing Program.

- WO 00366928-01, Investigate and repair Unit 1 Traversing Incore Probe (TIP) cable drive mechanism C, 0PT-01.2.2a, TIP System Valve Operability Test, 0PT-20.3, Local Leak Rate Testing
- WO 00349653-01, 1-B21-NVT-1-A, DC surge suppressor ground wire change, 0LP-NVT001, RPS, ECCS and RSDP Inverter and Power Supply, 0SPP-CBL001, Termination of Electrical Cables
- WO 00378988-01, Repair packing leak on 1-E41-F003, 0PT-09.7, HPCI System Valve Operability Test
- WO 00296648, Unit 2 valve 2-G16-F003, following maintenance to replace filter and valve regulator), Procedure OPT-11.3, Drywell Drains System Valve Operability Test (PMT)

- WO 00030301-07, Replace strainer vessel for 1B nuclear SW pump strainer, OSPP-HYDRO0501, Functional Pressure Testing, OPM-STR501, Inspection of RP Adams Self-Cleaning Strainers models VWS16 and VWS34

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

Risk

For the Unit 2 refueling outage (B216R1, approximately 27 days) which commenced on March 7, the inspectors reviewed the Unit 2 B216R1 Refueling Outage Safe Shutdown Risk Assessment Report, to verify the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The inspectors' review of this report was compared to the requirements in Procedure OAP-022, BNP Outage Risk Management, to verify that procedure requirements were met. The review was also to verify that, for identified high risk significant conditions, due to equipment availability and/or system configurations, contingency measures were identified and incorporated into the overall outage and response plan, and that defense-in-depth was maintained. The inspectors frequently observed the posted color for the current risk condition and discussed the reason for the posted conditions with operations and outage personnel to verify the condition was as-identified in the overall outage risk report and to assess licensee personnel knowledge of the risk condition and mitigation strategies. The inspectors observed licensee performance to identify, record, track, and correct problems during the outage.

Shutdown and Cooldown Process

The inspectors observed the shutdown of Unit 2 to enter the refueling outage to verify that activities were in accordance with Procedure OGP-5.0, Unit Shutdown.

Decay Heat Removal

The inspectors reviewed Procedures 2OP-17, RHR System Operating Procedure, 2OP-13, Fuel Pool Cooling and Cleanup System Operating Procedure, and OOP13.1, Supplemental Spent Fuel Pool Cooling System Operating Procedure. The inspectors also conducted a main control room panel walkdown and walked down portions of the systems in the plant to verify system availability and to confirm that no work was ongoing that might prevent system use for decay heat removal. The inspectors conducted a review of the increased outage risk condition of Orange, including the Supplemental Spent Fuel Pool Cooling Contingency Planning Summary, for the removal of decay heat, to verify the plant conditions and systems identified in the risk mitigation strategy were available to remove decay heat. The inspectors reviewed operational logs to verify that procedure and TS requirements to monitor and record reactor coolant

temperature were met. Additional items reviewed included the following:

- Controls implemented to ensure that outage work did not impact the ability of operators to operate the spent fuel pool cooling and RHR shutdown cooling system
- Monitoring of decay heat removal process and spent fuel pool water temperature profile
- Configuration control for heat removal systems

Reactivity Control

The inspectors observed licensee performance during shutdown, outage, and refueling activities to verify that reactivity control was conducted in accordance with procedure and TS requirements. The inspectors conducted a review of outage activities and risk profiles to verify activities that could cause reactivity control problems were identified. Licensee performance was compared to Procedure OAP-038, Reactivity Management Program Manual. Reactivity manipulations observed included the following:

- Power reduction with control rods and recirculation flow
- Fuel movement from the core to the spent fuel pool
- New fuel movement from the spent fuel pool to the core
- Control rod movement for testing

Inventory Control

The inspectors reviewed the following licensee activities related to inventory control during the refueling outage to verify that they were in accordance with Procedure OAP-022, BNP Outage Risk Management:

- Reactor water inventories and controls including flow paths, system configurations, and alternate means for inventory addition and controls to prevent inventory loss
- Operator monitoring and control of reactor temperature and level profiles
- Outage work and configuration control for activities that had the potential to drain the reactor vessel

Electrical Power

The inspectors reviewed the following licensee activities related to electrical power during the refueling outage to verify that they were in accordance with Procedure OAP-022, BNP Outage Risk Management:

- Controls over electrical power systems and components to ensure emergency power was available as specified in the outage risk report
- Controls and monitoring of electrical power systems and components and work activities in the power transmission yard
- Operator monitoring of electrical power systems and outages to ensure that TS requirements were met

- Review of clearance activities to verify that equipment was identified and controlled to support work and testing activities and that equipment was correctly returned to service or standby conditions

Containment Control and Closure

The inspectors reviewed the following licensee activities related to containment control and closure during the refueling outage to verify that they were in accordance with Procedure 0AP-022, BNP Outage Risk Management:

- Confirm secondary containment requirements during fuel movement
- Verify containment isolation valve leak rate test results met TS requirements

Additional documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either witnessed portions of surveillance tests or reviewed test data for the seven risk significant structures, systems and components (SSC) surveillances, listed below, to verify the tests met TS surveillance requirements, UFSAR commitments, in-service testing (IST), and licensee procedure requirements. The inspectors review was to confirm that the testing effectively demonstrated that the SSCs were operationally capable of performing their intended safety functions.

- PT-01.7, Reactor Heatup and Cooldown Verification following Unit 1 reactor trip
- PT-01.11, Core performance parameter check during Unit 1 startup
- WO 00312599-01, Unit 2 125VDC Batteries weekly operability test
- WO 00312641-01, Unit 2 HPCI Turbine Exhaust Diaphragm High Pressure Channel Calibration
- OPT-12.2C, No. 3 Diesel Generator Monthly Load Test
- OPT-09.7, Unit 1 HPCI System Valve Operability Test, 1-E41-F003*
- OMST-HPCI22Q, HPCI Steam Line Low Pressure Instrument Channel Calibration

*This procedure included IST requirements.

Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2OS1 Access Control To Radiologically Significant Areas

.1 Access Controls

a. Inspection Scope

The inspectors evaluated licensee activities for monitoring and controlling worker access to radiologically significant areas during the Unit 2 refueling outage. The inspection included direct observation of administrative and physical controls; appraisal of radiation worker (radworker) and health physics technician (HPT) knowledge and proficiency in implementing radiological controls; and review of the adequacy of procedural guidance and its implementation.

The inspectors observed implementation of radiological controls for selected radiation areas (RAs), radioactive material areas (RMAs), and high radiation areas (HRA) within selected licensee radiological controlled area (RCA) locations. Posting and labeling of materials at these locations were evaluated for consistency with procedural guidance and compliance with regulations. The inspectors directly observed the posting and locking status of locked high radiation area (LHRA) locations in the Unit 1 and 2 reactor buildings, Unit 1 turbine building, and the radioactive waste (radwaste) processing and storage facilities. Independent dose-rate measurements were conducted in the Unit 1 south residual heat removal heat exchanger room, along the Unit 1 east spent fuel pool heat exchanger wall, and in radwaste processing and storage areas. Results of the independent measurements were compared to current licensee surveys.

The inspectors evaluated radworker performance during instrumentation work underneath the reactor vessel. The inspectors attended the pre-job briefing, observed work via closed-circuit television, evaluated the use of radiological controls, observed HPT and radworker actions, evaluated radiation work permit (RWP) requirements and electronic dosimeter (ED) alarm setpoints, and discussed the task evolution with selected personnel. During general observations of drywell work, the inspectors questioned radworkers on RWP requirements.

The inspectors reviewed, in part, administrative guidance documents for control of material stored in spent fuel pools, posting of areas, access controls to LHRAs and very high radiation areas (VHRAs), survey of areas, and RWP use. The inspectors reviewed selected RWPs and surveys of such areas to evaluate the adequacy of radiological controls for RAs, HRAs, and airborne areas. In addition, training records for selected individuals were evaluated to determine the type of training provided to senior health physics (HP) technicians. HP supervision were interviewed regarding administrative

control of LHRA and VHRA keys, as well as changes to procedural guidance for access controls. Three internal dose assessments resulting from intakes of airborne radioactive material during the refueling outage were reviewed and evaluated.

Radiation Protection Program activities and their implementation were evaluated against 10 CFR Part 19.12; 10 CFR Part 20, Subparts B, C, F, G, H, and J; TS Section 5.7, High Radiation Area; and approved licensee procedures. Licensee guidance documents, records, and data reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

Selected corrective action program (CAP) documents initiated for access controls issues were reviewed. Three AR documents and one self-assessment were reviewed in detail and discussed with HP supervision. The inspectors assessed the licensee's ability to characterize, prioritize, and resolve the identified issues in accordance with Procedure CAP-NGGC-0200, Corrective Action Program. Documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The plant collective exposure history for the years 1998 through 2000, based on the data reported pursuant to 10 CFR 20.2206 (c), was reviewed and discussed with the licensee. Implementation of the licensee's ALARA program during the Unit 2 refueling outage was also observed and evaluated by the inspectors. The inspectors reviewed ALARA planning, dose estimates, and prescribed ALARA controls for the five outage work activities expected to incur the maximum collective exposures. The reviewed activities included: installation and removal of temporary lead shielding, mechanical valve repair, reactor head inspection and replacement, and air actuator valve work. Incorporation of the planning, established work controls, and expected dose and dose rates into ALARA pre-job briefings and RWPs for those activities also was reviewed. Those elements of the ALARA program were evaluated for consistency with the methods, practices, and philosophy delineated in the licensee's ALARA System Manual. The inspectors also independently verified that selected job site dose rates were consistent with the dose rates recorded on pre-job survey maps for selected work areas in the Unit 2 drywell.

Records of year-to-date individual radiation exposures sorted by work groups were examined for significant variations of exposures among workers. Exposure tracking during the Unit 2 outage and records of exposures to declared pregnant workers incurred during December 2002 through March 2003 were also reviewed.

Selected elements of the licensee's source term reduction and control program were examined to determine whether the program was effective in reducing exposure and implemented as described in the ALARA System Manual. Reviewed areas included hot spot identification and reduction, primary chemistry shutdown controls, radiation field monitoring and trending, and temporary shielding.

The licensee's ALARA program implementation and practices were evaluated for consistency with TS Section 5.4.1, Procedures, and TS Section 5.7, High Radiation Area Controls; 10 CFR Part 20 requirements; Regulatory Guide 8.29, and procedural guidance listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed ARs and audits related to the ALARA program. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Procedure CAP-NGGC-0200, Corrective Action Program. Documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

.1 Waste Processing and Characterization

a. Inspection Scope

The inspectors evaluated the operational status of selected liquid and solid radwaste processing systems and equipment. Inspection activities included document and record review, interviews with responsible plant personnel, and direct inspection of selected processing equipment and associated piping.

The inspectors directly observed processing equipment material condition and configuration for liquid processing and solid radwaste systems. Health Physics and Operations staff knowledge of resin processing, sluicing activities, and solid radwaste system operations were assessed through interviews and discussion of equipment function and operability. Piping and system components were inspected for material condition and for configuration compliance with UFSAR Section 11. Procedural

guidance involving transfer of resin and filling of waste packages was reviewed for consistency with the Process Control Program (PCP) and the UFSAR. In addition, the inspectors directly observed the material condition of abandoned radioactive waste centrifuge and hopper equipment located within the radwaste facility.

Licensee radionuclide characterizations of selected solid waste streams were evaluated. For dry active waste (DAW), primary resin, secondary resin, and filters, the inspectors evaluated PCP and licensee procedural guidance against 10 CFR 61.55 and the Branch Technical Position on radioactive waste classification details. Comparison data between the current waste sample gamma-emitter concentrations and those of a vendor laboratory were evaluated. The licensee's analysis for and the use of scaling factors for hard-to-detect nuclides were assessed.

b. Findings

No findings of significance were identified.

.2 Transportation

a. Inspection Scope

The inspectors evaluated the licensee's activities related to transportation of radioactive material. The evaluation included review of procedures and completion of shipping records, assessment of worker knowledge and proficiency in shipping activities, and direct observation of shipment preparation activities.

Shipping-related procedures, guidance documents and selected shipping records were evaluated for compliance with applicable regulatory requirements. Current training records for individuals involved in transportation activities were reviewed.

The inspectors observed loading bracing, and packaging feed-water heater equipment, and compacting and preparing DAW material for offsite burial. Responsible staff were interviewed regarding bracing and packaging requirements, and radiation dose rate, and contamination limits.

Transportation program guidance and implementation were reviewed against regulations detailed in 10 CFR 71 and 49 CFR 170-189, and applicable licensee procedures. In addition, training activities were assessed against 49 CFR 172 Subpart H, and the guidance documented in Nuclear Regulatory Commission (NRC) Bulletin 79-19. Documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

Licensee corrective action for issues listed in Section 2PS2 of the Attachment, including self-assessments, audits, and ARs associated with radwaste processing and radioactive material transportation activities were reviewed. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Procedure CAP-NGGC-0200, Corrective Action Program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Occupational Radiation Safety PI

a. Inspection Scope

The licensee's records and data generated during Calendar Year (CY) 2002 for the Occupational Exposure Control Effectiveness PI were reviewed. The information reviewed included data reported to the NRC, pertinent corrective action program issues and selected radiological control program records. The inspectors assessed the licensee's CY 2002 monthly reviews for PI occurrences which were performed pursuant to Procedure REG-NGGC-0009, NRC Performance Indicators, Rev. 1. The licensee's disposition of the reviewed issues was evaluated against NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2. Documents and procedures reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Public Radiation Safety PI

a. Inspection Scope

The licensee's records and data generated during CY 2002 for the Radiological Effluent Control PI were reviewed. The information reviewed included data reported to the NRC, pertinent corrective action program issues and selected radiological effluent control program records. The inspectors assessed the licensee's CY 2002 monthly reviews for PI occurrences which were performed pursuant to Procedure REG-NGGC-0009, NRC Performance Indicators, Rev. 1. The licensee's disposition of the reviewed issues was evaluated against NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2. Specific procedures, records, and ARs reviewed and evaluated for this PI are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 Unit 1 Scram Following a Trip of the 1B Reactor Feedwater Pump

a. Inspection Scope

The inspectors reviewed the licensee's actions in response to a Unit 1 scram on low reactor water level that occurred on January 12, 2003, following a trip of the 1B reactor feedwater pump. The inspectors reviewed control room logs, parameter recorders, and discussed plant response with operators on shift during the scram to verify performance was as required by procedure and equipment response was as described in design basis documents. The inspectors compared operator performance to the requirements in Procedure 0OI-01.02, Shift Routines and Operating Practices; Abnormal Operating Procedure 0AP-23.0, Condensate/Feedwater System Failure; and Emergency Operating Procedure 1EOP-01-LPC, Level Power Control, 1EOP-01-RSP, Reactor Scram Procedure and 1EOP-01-RVCP, Reactor Vessel Control Procedure. In addition, the inspectors reviewed Procedure 0OI-01.06, Post Trip Review to verify the initial data gathering, equipment response and post-trip review were conducted in accordance with the procedure requirements. The inspectors also reviewed the initial 10 CFR 50.72 notification and compared the licensee's reporting to the requirements in Procedure 0OI-01.07, Notifications, and 10 CFR 50.72. The licensee entered this event into their corrective action program as AR 00081455. Licensee personnel performance is discussed in Section 1R14. The associated LER is closed in Section 4OA3.4.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 50-325/2002-001-00, Oscillation Power Range Monitor (OPRM) Inoperable Due to Non-Conservative Setpoint

This LER reported a non-conservative condition affecting the Unit 1 OPRM system identified in a November 22, 2002, 10 CFR 21 report. This system design is not implemented on Unit 2. The non-conservative condition was for the T-min value used in OPRM algorithm. The licensee determined the root cause was an incomplete analysis performed by the original vendor (GE) when establishing oscillation period ranges. The OPRM upscale trip function provides protection against exceeding the fuel minimum critical power ratio safety limit, should thermal-hydraulic power oscillations occur. The licensee declared the OPRM system inoperable and entered TS Limiting Condition of Operation (LCO) 3.3.1.1, Reactor Protection System Instrumentation. On November 27, 2002, the licensee completed a modification that revised the T-min value and restored the system back to operable status. The LER was reviewed by the inspectors and no findings of significance were identified.

.3 (Closed) LER 50-324/2002-001-00, Instrument Malfunction Results in Loss of Safety Function for the High Pressure Coolant Injection System

This LER documented an equipment failure that resulted in the loss of the HPCI system. A steam line high flow analog trip unit malfunction resulted in a HPCI steam outboard isolation valve closure and HPCI system inoperability. The licensee entered TS LCOs 3.5.1, Emergency Core Cooling System-Operating, and 3.3.6.1, Primary Containment Isolation Instrumentation. The licensee later determined that the spurious actuation of the analog trip unit was due to a malfunction of the output transistor. The licensee replaced the trip unit and the system was returned to operable status. This event was entered into the licensee's Corrective Action Program as AR 00076076. This event did not constitute a violation of NRC requirements.

.4 (Closed) LER 50-325/2003-001-00, Reactor Feed Pump Trip Results in Specified System Actuations

This LER documents a Unit 1 reactor feed pump trip on January 12, 2003, that resulted in a decreasing reactor water level and subsequent reactor scram. The licensee determined the cause of the reactor feed pump trip was due to low lube oil pressure. The in-service lube oil pump tripped when a motor start relay coil failed due to an end-of-life short. The standby lube oil pump failed to start and restore lube oil header pressure prior to the feed pump trip. The licensee planned further investigations to resolve the lube oil pump problem. Licensee actions and plant response are described in Section 40A3.1. This LER was entered into the licensee's Corrective Action Program as AR 00081455. This event did not constitute a violation of NRC requirements.

40A6 Meetings, including Exit

On March 28 the inspectors presented the inspection results to Mr. J. Keenan and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

A. Brittain, Manager Security
W. Dorman, Manager Nuclear Assessment
N. Gannon, Director of Site Operations
J. Gawron, Training Manager
D. Hinds, Manager Brunswick Engineering Support Section
J. Keenan, Site Vice President
E. O'Neil, Manager Site Support Services
W. Noll, Plant General Manager
E. Quidley, Manager Maintenance
H. Wall, Manager Outage and Scheduling
M. Williams, Manager Operations

NRC Personnel:

P. Fredrickson, Branch Chief, Division of Reactor Projects (DRP), Region II (RII)

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-324/2002-001-00	LER	Instrument Malfunction Results in Loss of Safety Function for the HPCI System (Section 40A3.3)
50-325/2002-001-00	LER	OPRM Inoperable Due To Non-Conservative Setpoint (Section 40A3.2)
50-325/2003-001-00	LER	Reactor Feed Pump Trip Results in Specified System Actuations (Section 40A3.4)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R05: Fire Protection

UFSAR Section 9.5.1

0PFP-DG, Diesel Generator Building Prefire Plans

0PFP-PBAA, Power Block Auxiliary Areas Prefire Plans SW RW AOG TY EY

0OI-01.08, Control of Equipment and System Status

0PT-34.11.2.0, Fire Extinguisher Monthly Inspection Service Water Building (monthly complete 02/03, 03/03)

0PT-34.2.3.0, Monthly Hose Station Inspection (monthly complete 02/03)

0PT-34.4.1.5, AOG and Service Water Building Fire Detection Instrumentation Operability Test (annual complete 07/02)

0PT-34.12.1.3, Sprinkler System Water Flow Alarms Diesel Generator Building (18 month complete 6/02)

0PT-34.5.6.0, Diesel Generator Building Halon System Functional Test (annual complete 10/02)

0PT-34.4.1.4, Diesel Generator Building Fire Detection Instrumentation Operability (annual complete 1/03)

0PT-34.6.7.10, Fire Barrier Penetration Seals Diesel Generator Building (18 month complete 5/02)

0PT-34.2.1, Diesel Generator Building Halon Fire Extinguisher System Liquid Level and Cylinder Pressure Verification (semiannual complete 10/02)

AR 76321, AR 76871, AR 77162, AR77393

Section 1R08: Inservice Inspection

Procedures

NDEP-0617, Enhanced VT-1 (EVT-1) Examinations for the Brunswick Plant, Rev. 6

NDEP-0611, VT-1 Visual Examination of Nuclear Power Plant Components, Rev. 14

NDEP-0613, VT-3 Visual Examination of Nuclear Power Plant Components, Rev. 18

OPT-90.1, Vessel Internal Component Remote Examination, Rev. 27

NDEP-0452, PDI-UT-6, Manual Ultrasonic Examination Procedure for Reactor Pressure Vessel Welds (PDI), Rev. 0

OSP-03-001, Manual Ultrasonic Examination of Nozzle Inner Corner Radius Area per ASME Section XI (Appendix VIII), Rev 0

Other Documents

Calculation Package CPL-53Q-304, Risk Ranking for Brunswick Units 1 and 2 (for Risk-informed ISI)

Section 1R17 Permanent Plant Modifications

Brunswick Unit 2, Extended Power Uprate Implementation Plan, rev. 0

General Electric Service Information Letter No. 644, BWR/3 Steam Dryer Failure, dated 8/21/02

INPO SER 5-02, Lessons Learned from Power Uprates, dated 8/21/02

Condition Report (CR) 69556-10, Lessors Learned from Power Uprates

Brunswick Self-Assessment 78686, EPUR Readiness for NRC Inspection, dated 2/03
 CR 77921, Trend of Issues Identified During Unit 1 Alternate Source Term
 Modifications, dated 11/21/02
 CR 63833, Trend of Heat Balance Errors - Unit 1 EPUR, dated 12/12/01
 2SP-02-200, Unit 2 Intermediate EPUR Startup Test Plan, rev. 0
 2SP-02-201, Unit 2 EPUR Digital Feedwater Control System Testing, rev. 1
 BWR Owners Group (BWROG) Report for Increasing MSIV Leakage Rate Limits and
 Elimination of Leakage Control Systems, dated 8/1999
 Engineering Change (EC) 49981, Unit 2 Rescale and Respan MSL A through D High
 Flow, rev. 1
 EC 46773, Unit 2 Digital Feedwater Control System Changes for EPUR, rev. 5
 EC 46907, Alternate Source Term (AST) for Unit 2 Operation, rev. 2
 EC 47907, Implement Unit 2 EPUR. Rev. 2
 EC 47894, Seismic Qualification/Modification for EPUR and AST, rev. 3
 OPT-01.8D, Core Thermal Power Calculation, rev. 22
 OPT-50.0, Reactor Engineering Refueling outage Testing, rev. 27
 Calculation M-89-0010, Power Uprated Feedwater Flow Nozzle Differential Pressure
 and Scaling Calculation ($\frac{1}{2}$ -C32-FT-N002A and B), dated 10/16/01
 EC 46810, Unit 2 Standby Liquid Control System Concentration Change for EPUR,
 NRC IN 2002-26, Failure of Steam Dryer Cover Plate After a Recent Power Uprate,
 dated 9/11/02

Section 1R20: Refueling and Outage Activities

0OI-01.02, Shift Routines and Operating Practices
 0OI-01.08, Control of Equipment and System Status
 0AP-050, Site Command, Control, and Communications Procedure
 0AI-58.2, Equipment Control and Caution Tagging
 0AI-122, Pre-Job Briefs and Post-Job Critiques 0PT-14.1A, Control Rod Coupling Check
 and CRD Testing
 0AI-127, Primary Containment Inspection and Closeout 0PT-25.1, Nuclear Steam
 Supply System Main Steam and Feedwater Isolation Valve Operability Test
 0PT-40.2.7, Testing of Main Steam Isolation Valves After Maintenance (stroke timing)
 0PT-20.3, Local Leak Rate Testing (LLRT)
 - LLRT for 2-B32-F019, F020, WO-289927, PMT-2-B32-F019
 - LLRT for 2G31-F001, WO-135211-01
 - LLRT for 2-RNA-SV-5251, WO-321841-01
 - LLRT for 2-E11-F028A, WO-139504-01
 0ENP-24.12, Preparation of Core Component Sequence Sheets

Section 1R22: Surveillance Testing

0MST-Batt11W, Batteries, 125 VDC Weekly Operability Test
 TS 3.8.4, DC Sources - Operating
 TS 3.8.6, Battery Cell Parameters
 USFAR, Section 8.3.2,
 TS 3.3.6, Primary Containment Isolation Instrumentation
 TS 3.8.1, AC Sources - Operating
 TS 3.8.3, Diesel Fuel Oil

Section 2OS1: Access Control To Radiologically Significant Areas

Procedures, Guidance Documents

Environment and Radiation Control (E&RC) Procedure, 0E&RC-0100, Radiation Survey Methods, Revision (Rev.) 32
 0E&RC-0101, Performance and Tracking of Routine Surveillances, Rev. 5
 0E&RC-0120, Routine/Special Airborne Radioactivity Survey, Rev. 19
 0E&RC-0230, Issuance and Use of Radiation Work Permit, Rev. 43
 0E&RC-0040, Administrative Controls for High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas, Rev. 22 and Rev. 23
 Administrative Instruction (AI) 0AI-112, Control of Material in Spent Fuel Pool, Rev. 14
 Health Physics Standard Procedure, (HPS)-NGGC-0003, Radiological Posting, Labeling, and Surveys, Rev. 7
 CAP-NGGC-0200, Corrective Action Program, Rev. 7

Radiation Work Permit (RWP) Documents

RWP 638, U1 RHR Corrective and Preventive Maintenance
 RWP 633, Painting and Grouting Activities
 RWP 538, Drywell - I&C/E Under vessel Work (B216R1) (Aplan # 2665)
 RWP 568, Mech. Corr. & Prev. Maint - RB/TB/RW (B216R1) (Aplan # 2663)

Radiation Surveys

Number (No.) 0212-006, U1 20' & 9' South RHR Rooms, 02/12/03.
 No. 0323-011, U1 80' Northeast Reactor Building, 03/23/03
 No. 0319-068, U2 Under Vessel, 03/19/03
 Nos. 0711-009 and 0113-012 , Loading Dock, 07/11/02, and 01/13/03
 No. 0129-013, Liner Storage Area, 01/29/03
 No. 0219-010, Radioactive Waste Processing Area, 02/19/03
 No. 0313-042, Radwaste 35' Elevation Hopper Room, 03/13/03
 No. 0407-013, U1 Condensate Storage Tank and Radwaste Yard, 04/07/03,
 No. 0408-013, Radwaste Yard, 04/08/03,

Action Request (AR) and Self-Assessment Documents

AR 00076061, 20% of Radworkers Failed Radworker Knowledge Question, 11/01/02
 AR 00088966, Non-Conspicuously Posted Radiation Area (RA) Identified, 03/27/03
 AR 00087227, HP Technician Left LHRA Door Briefly Unguarded, 03/11/03
 B-ERC-02-01, Environmental and Radiation Control Assessment, 06/05/02.

Section 20S2: ALARA Planning and Controls

Procedures

ADM-Nuclear Generation Group Standard Procedure (NGGC)-0105, ALARA Planning, Rev. 6
 DOS-NGGC-002, Dosimetry Issuance, Rev. 18
 2002 ALARA Continuous Improvement Strategy
 0AI-52, ALARA Committee Activities and Responsibilities, Rev. 12
 0E&RC-0040, Administrative Controls For High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas, Rev. 23
 0E&RC-0010, Guidelines For Flushing and Draining Systems/Components, Rev. 6
 0E&RC-0208, Hydrolazing Procedure, Rev. 3
 0E&RC-0229, Control and Use of HEPA Vacuum Cleaners and Mobile Air Filtration Units, Rev. 7
 0E&RC-0275, Installation Testing and Use os Glove Bag Devices, Rev. 3
 Nuclear Generation Group, Standard Procedure, Volume 99, Book/Park 99, MNT-NGGC-0004 Scaffolding Control , Rev. 3
 MNT-NGGC-0003, Radiation Shielding Use, Rev. 8
 ADM-NGGC-0104, Work Management Process, Rev. 19
 Corrective Maintenance CM-CRD500, CRD Removal and Installation Inspections, Rev. 11

Graphs and Data

2002 Monthly Exposures by Work Group
 Annual ALARA Review for 2003
 Personnel Dose Status, 02/10-13/03
 Annual Collective Radiation Exposures 1978 - 2003, 02/11/03
 U2 RCR Piping Dose Rate History December 1985 to February 2001
 U1 Outage Exposures Cycles 09 to14 and U2 Outage Exposure Cycles 11 to 15
 Three year Rolling Average Cumulative Radiation Exposure 1979 to 2002
 B216R1 AWP Dose Estimate Tracking Report, February 10, 2003
 B216R1 Project Dose Status Report, March 11, 2003

Records

ALARA Continuous Improvement Strategy, 2002
 B216R1, Project Dose Status Report, February 10 - 14, 2003
 ALARA Committee Meeting Minutes, 11/06/02, 12/04/02, 01/08/03, and 02/05/03
 Annual ALARA Review, 2000, 2001, and 2002
 Post Job ALARA Critique, Number 2601, Main Steam Isolation Valve Inspections and Repairs, 03/25/02
 Post Job ALARA Critique, Number 2587, Shielding, Permanent & Temporary, 03/27/02
 Post Job ALARA Critique, Number 2584, Insulation Removal/Replacement, 04/09/02
 Post Job ALARA Critique, Number 2590, 2002 Refuel Floor Activities, 06/20/02
 In-Progress ALARA Evaluation, Number 2614, Unit One 2002 Snubber Maintenance, 03/15/02
 B216R1 Shielding Plan
 B216R1 Outage Water Movement Schedule, Revision 0, 11/11/02
 B216R1 ALARA Work Plan (AWP) 2677, 2A RCR Pump Motor Replacement
 B216R1 AWP 2649, Shielding

B216R1 AWP 2652, Refuel Floor Activities
 B216R1 AWP 2660, Safety Relief Valve
 B216R1 AWP 2653, Integrated Inspections
 B216R1 AWP 2677, 2A RCA Pump Motor Replacement
 Progress Energy Company, Plant Access and Radiation Worker Training, 08/30/02.

RWPs

RWP 740, 2A Recirculation Pump Motor Replacement
 RWP 558, Reactor Pressure Vessel Dis/Reassembly/Refueling/Sipping
 RWP 535, Drywell Temporary Shielding
 RWP 569, Integrated Inspection/Flow Accelerated Corrosion Exams/Support
 RWP 544, SRV Support Work
 RWP 533, Drywell Outage Management/Safety Inspection
 RWP 579, Drywell Control Rod Drive Replacement

ARs and Audits

AR 087227, LHRA Boundary Not Controlled by Radiation Control, 03/11/03
 AR 087229, Delays To Integrated Inspection Process, 03/11/03
 Self-Assessment Report, Station ALARA Training, 06/04 - 08/01
 B-ERC-02-01, Environmental and Radiation Control Assessment, 06/05/02

Section 2PS2: Radioactive Material Processing and Transportation

Procedures, Guidance Documents

0AI-54, Waste Management Program, Rev. 7
 0E&RC-0507, Waste Stream Sample Data Analysis and Control, Rev. 2
 0E&RC-0511, Collection and Preparation of Dewatered Resin, Liquid Samples, and Process
 Filters for Analysis, Rev. 7
 HPS-NGGC-0001, Radioactive Material Receipt and Shipping Procedure, Rev. 16
 Operating Procedure (OP), 0OP-32.1, Condensate Deep Bed Demineralizer System,
 Rev. 61
 0E&RC-0515, Review of Process Control Program (PCP), Rev. 6
 0E&RC-0560, Collection and Preparation of Samples for 10 CFR61 Analyses, Rev. 4
 Certificate of Conformance for Package 12-FWH98109-OL, 3/11/03
 Certificate of Compliance 9001, Rev. 36, Package Number USA/9001/B()F
 Certificate of Compliance 9204, Rev. 8, Package Number USA/9204/B(U)85
 CAP-NGGC-0200, Corrective Action Program, Rev. 7

Records and Data

Personnel Qualification Data Training Status Records as of March 12, 2003, for:

EV601G, DOT General Awareness/Familiarization; EV602G, DOT Shipping Papers;
EV603G DOT Hazardous Material Packaging; EV604G DOT Placarding; EV605G, DOT
Loading and Unloading

Brunswick 2003 EPUR Component Removal Project, Packaging Plan Summary, Rev. 0

Low-Level Radioactive Waste Data Sheets for Waste Stream Types Including:

Dry Active Waste (DAW) Smear Sample Numbers (Nos.) 99R000781 (08/17/99), Z15804
(06/22/01)

Reactor Water Clean Up Resin Sample Nos. 99R000465 (05/07/99), 01R002334
(05/07/01)

CFD Filter Media, Sample No. 02R000483 (02/14/02)

Powdered Resin-3, Sample Nos. 01R002333 (08/27/01), 01R002334 (05/07/01)

Bead Resin, Sample Tracking No. 00R000123 (02/15/00)

Sample Data Validation Sheets for Waste Stream Samples Including DAW (06/22/01) and
RWCU (05/07/01)

Shipment Number (No.) 02-045B, Radioactive Material, LSA, n.o.s. 7, UN2912, RQ-Asbestos,
Compacted and Non-compacted DAW 0730-01-006, 06/12/02

Shipment No. 02-070, Radioactive Material, n.o.s. 7, UN2982, Fissile Excepted,
RQ-Radionuclides, CRBs and PRMs. with Fission Chambers, 06/19/02

Shipment No. 02-076, Radioactive Material, n.o.s. 7, UN2982, Fissile Excepted,
RQ-Radionuclides, CRBs, LPRMs with Fission Chambers, Boron Tubes, Channel Clips,
IRMs, SRMs, and TIPs, 06/24/02

Shipment No. 02-079, Radioactive Material, n.o.s. 7, UN2982, Fissile Excepted,
RQ-Radionuclides, Filters, VL, IRM, CRD Segment, 07/01/02

Action Request (AR) and Self-Assessment Documents

Self-Assessment Report No. 5300, Brunswick Nuclear Plant Radioactive Material Shipping
Program, conducted November 11-22, 2002

B-ERC-02-01, Environmental and Radiation Control Assessment, 06/05/02.

AR 44708, Improvement Area, Radioactive Contamination Controls associated with Radwaste
System Operation, 06/20/01

AR 56141-02, Resin Found on Floor of Waste Collector Cubical, 02/22/02

AR 60843, Failure to Post Radiation Area Associated with Staged Railroad Cars Containing
DAW, 05/15/02

AR 65571-2, Shipped Container of Waste Received at Vendor Facility with Free-standing
Liquid, 07/05/02

Section 40A1: Performance Indicator VerificationProcedure

REG-NGGC-0009, NRC Performance Indicators, Rev. 1

Records and ARs

Computer printout of workers exceeding dose alarm limits during the period January 2002 through March 2003

REG-NGGC-0009, Attachment 11, Occupational Exposure Control Effectiveness, and Attachment 12, RETS/ODCM Radiological Effluent Occurrence, for the months of January through December 2002

Liquid and Gaseous Effluent Dose Summation Reports for each quarter of 2002

AR 00056964, Electronic Dosimeter Dose Alarm Setpoint Exceeded, 3/6/02

AR 00058094, Electronic Dosimeter Dose Alarm Setpoint Exceeded, 3/23/02

AR 00069475, Door to Locked High Radiation Area Would Not Lock, 8/21/02