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

October 28, 2002

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. 50-325/02-03 AND 50-324/02-03

Dear Mr. Keenan:

On September 28, 2002, 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 October 7, 2002, with Mr. James Scarola 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 an issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Brunswick facility.

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/ (G. MacDonald for)

Brian R. Bonser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 50-325/02-03, 50-324/02-03
w/Attachment

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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:	50-325/02-03, 50-324/02-03
Licensee:	Carolina Power and Light Company
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	8470 River Road SE Southport, NC 28461
Dates:	June 30, 2002 - September 28, 2002
Inspectors:	W. Bearden, Reactor Inspector (1R12) J. Brady, Senior Resident Inspector (Harris Plant) (1R06, 1EP6) E. DiPaolo, Resident Inspector (McGuire Nuclear Station) (1R05, 1R13, 1R19, 1R22) T. Easlick, Senior Resident Inspector J. Ennis, Physical Security Inspector (3PP3) D. Forbes, Radiation Specialist (2OS3) M. Giles, Resident Inspector (Catawba Plant) (1R05, 1R15, 1R13, 1R19, and 1R22) E. Guthrie, Resident Inspector

Enclosure

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J. Wallo, Physical Security Inspector (3PP3, 4OA5)
F. Wright, Senior Radiation Specialist (2OS3, 2PS1, 2PS3)
J. Zeiler, Senior Resident Inspector (Vogtle Electric Generating Plant) (1R04, 1R05, 1R11, 1R13, and 1R22)

Approved by: B. Bonser, Chief,
Reactor Projects Branch 4
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000325-02-03, IR 05000324-02-03; Carolina Power & Light; on June 30, 2002 - September 28, 2002; Brunswick Steam Electric Plant, Units 1 & 2. Fire Protection.

The inspection was conducted by resident inspectors, regional radiation specialists, a reactor inspector and regional security inspectors. The inspection identified one Green finding, which was a non-cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 “Significance Determination Process” (SDP). 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 Findings

Cornerstone: Mitigating Systems

- Green. The licensee failed to install fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs.

  The finding was of very low safety significance based on the initiating event likelihood for this event in conjunction with the remaining mitigation capability in the Unit 1 and Unit 2 CSRs (Section 1R05).

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 with the following exceptions. On July 26 power was reduced to 60 percent for rod improvements and scram time testing. On September 21 the unit was shutdown for a maintenance outage to remove leaking fuel bundles.

Unit 2 began the report period returning to full power. The unit operated at full power with the following exceptions. On August 16 power was reduced to 57 percent for condenser tube leak repairs. On September 13 power was reduced to 67 percent for rod improvements and scram time testing.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed the licensee's preparations for severe weather as described in Administrative Instruction 0AI-68, Brunswick Nuclear Plant Response to Severe Weather Warnings. The review verified that selected risk significant systems including the service water system and the emergency diesel generating system, would remain functional when challenged by adverse weather; that the procedures would require system readiness and adequate staffing; and that the operators' actions required for those systems selected could be accomplished during severe weather. The reviews were performed for the following types of weather related risks identified for the site:

- Seasonal hurricane preparation
- Storm preparations for Tropical Storm Gustav

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. Documents reviewed are listed in the attachment to this report. The inspectors verified the following system alignments:

- Diesel Generator 3, when Diesel Generator 4 was out of service for maintenance (Second Quarter 2002)
- Diesel Generator 4, when Diesel Generator 3 was out of service for maintenance (Second Quarter 2002)
- Unit 1, High Pressure Coolant Injection (HPCI), when Reactor Core Isolation Cooling (RCIC) was out of service for surveillance testing.
- Diesel Generator 1, 2, and 3, when Diesel Generator 4 was out of service for maintenance
- Unit 1, Residual Heat Removal (RHR) System Loop A, when Loop B was out of service for maintenance

In addition, the inspectors performed a detailed walkdown, of the Unit 1 HPCI system, to verify that the system was correctly aligned, and labeled. The power sources and support systems were also verified to be available. The review of this system included a review of outstanding design issues, maintenance work requests, temporary modifications, and the associated documents. Documents reviewed are listed in the attachment to this report.

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 ongoing 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:

- Unit 1 and 2, Service Water Building (2 areas) (Second Quarter 2002)
- Unit 2, Emergency Core Cooling System Rooms (HPCI, North RHR and South RHR, -17 foot elevations, 3 areas)
- Unit 2, Reactor Building, 20 foot elevation, and South and North Core Spray Rooms, -17 foot elevations (4 areas)

The inspectors observed a plant fire drill to assess the fire brigade performance to ensure proper firefighting techniques for the type of fire encountered. Documents reviewed are listed in the attachment to this report.

- Drill Number 99-F-OS-05, Fire at Gas Cylinder Storage Building

In addition, the inspectors reviewed the design basis of the Unit 1 and 2 Cable Spreading Rooms fixed fire suppression systems.

b. Findings

Introduction

A violation was identified for failing to have installed fixed fire suppression systems that were capable of minimizing damage to safe shutdown cabling caused by floor level transient combustible fires in the Unit 1 and Unit 2 Cable Spreading Rooms (CSRs). The systems were determined to be unable to fulfill their intended function of limiting fire damage to the preferred trains of safe shutdown cables and safety-related cables in the CSRs.

Description

The inspectors reviewed a licensee engineering evaluation of the CSRs fixed fire suppression system response to credible CSR fire scenarios. The engineering evaluation showed that the fixed fire suppression system would not actuate in the event of a substation fire, and certain floor level transient combustible fires when the fires were located between the system sprinkler heads. The fire modeling showed that the sprinkler head fusible links would not be exposed to enough of the heat generated by the adjacent fire to melt the fusible links and actuate the fixed fire suppression system sprinkler heads. The engineering fire modeling also showed that fire damage would have occurred to the safe shutdown system trains of electrical cabling located in the overhead of the room by the time that the sprinkler heads actuated.

The system was installed to protect the safe shutdown system train cabling located in the overhead of the CSR. The system was installed as a manual operated system with fusible link sprinkler heads. Operator action would be taken to open an isolation valve that would flood the fire header with water in response to a fire detection system alarm in the CSR. The engineering fire modeling showed that with the fixed fire suppression system isolation valve open and the suppression system header flooded with water the sprinkler heads would not actuate until enough heat was generated in the ceiling area to reach the location of the sprinkler heads. The delay in system actuation would allow fire damage to the safe shutdown system train cabling. The system was not able to minimize fire damage to the safe shutdown system train cabling even after the sprinkler heads eventually actuated because the fixed fire suppression system was installed at a height that was below all of the safe shutdown system train cabling located in the room. The actuated sprinkler heads would have minimal effect on the fire damaged cabling that was located above the sprinkler heads.

Analysis

The CSRs contained two separate trains of preferred safe shutdown cabling that performed various safe shutdown control functions associated with mitigating system equipment. The installed configuration of the fixed fire suppression system

compromised the fire protection defense-in-depth strategy of rapidly detecting and suppressing fires. The fixed fire suppression system configuration was incapable of performing its intended function of minimizing the adverse effects of fire damage to safety related cabling and preferred safe shutdown train cabling from floor level transient combustible fires that were located between sprinkler heads. A Significance Determination Process (SDP) Phase 2 analysis was performed because there was a degradation of fire protection system features and defense-in-depth pertaining to rapidly detecting and suppressing fires when they occur and the degradation involved the fixed fire suppression systems in the CSRs.

During the Phase 2 fire protection risk significance screening, the fire mitigation frequency (FMF) was calculated in an effort to determine the change in risk for not having a properly designed fire suppression system. The following formula was used:

$$FMF = \log_{10}(IF) + FB + MS + AS + CC \text{ (when appropriate)}$$

IF = fire ignition frequency - this value was obtained from the Individual Plant External Events Examination (IPEEE), section 4.5.5.9., Table 4.5-7.
FB = fire barrier - No degradation of fire barriers existed = 0
MS = manual suppression/detection- fire brigade performance was adequate - manual suppression was degraded = -.5
AS = automatic suppression/detection - automatic suppression was not required = full credit = -1.25
CC = dependencies/common cause (not appropriate in this case)

IF (for transient fire) = 4.98×10^{-4} per year
$FMF = \log_{10}(4.98 \times 10^{-4}) + 0 + -.5 + -1.25 = 10^{-5.05}$ per year

The initiating event likelihood rating was determined to be 'F' using the FMF value for transient fires. The fire scenarios and the fire scheme as defined by NRC Inspection Manual, Manual Chapter 609, Appendix F, Determining Potential Risk Significance of Fire Protection and Post-Fire Safe Shutdown Inspection Findings for the CSRs, was determined to be equivalent to the '-1' column of the Risk Significance Estimation Matrix. The '-1' column was defined as "Recovery of a failed train or operator action under high stress." The Phase 2 SDP analysis concluded that this finding was of very low safety significance based on the determined event likelihood rating 'F' in conjunction with the equivalency of the Risk Significance Estimation Matrix '-1' column to the fire scheme analysis for the CSRs. The regional Senior Reactor Analyst performed a validation of this Phase 2 analysis.

Enforcement

The CSRs were designated as areas requiring Alternative Shutdown capability, which was the reason the manual fixed fire suppression systems were installed in the CSRs. The fixed fire suppression systems were installed eight feet six inches off the floor, so that all of the safe shutdown cabling was located above the fixed fire suppression systems. This configuration existed in both CSRs. The CSR ceilings were located approximately twenty feet from the floor. The CSRs were non-combustible, smooth concrete ceiling rooms. The licensee's Updated Final Safety Analysis Report (UFSAR)

stated in chapter 9, section 9.5, Fire Zone CB-5 Unit 1 Cable Spread Room, “Fire protection in the zone includes a fixed manually actuated sprinkler system with heads located below the cable trays to control a fire in transient combustibles located at floor level.” Additionally in the same section the UFSAR stated “The existing sprinkler system is adequate to control and extinguish fires in transient combustibles thus limiting involvement of cables.” The engineering document reviewed by the inspectors showed that the system did not meet UFSAR stated design functions and capabilities.

10CFR 48(a)(i) requires that all operating nuclear plants have a fire protection program that satisfies Criterion 3 of Appendix A to 10 CFR 50. Criterion 3 states that fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. 10 CFR 48(b) provides that Appendix R to Part 50 establishes fire protection features required to satisfy Criterion 3. Section III.G.3 of Appendix R requires that fire areas which require Alternative Shutdown have fire detection and a fixed fire suppression system installed in the area. Both of the unit license conditions state that the licensee “shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility.” Contrary to the above the fixed fire suppression systems installed in the Unit 1 and Unit 2 CSRs, designated Alternative Shutdown areas, are not designed with appropriate capability to minimize the adverse effects of fire damage to safe shutdown cabling in the overhead of the CSRs in that the fixed fire suppression system will not actuate during floor level transient combustible fires that are located in between the system sprinkler heads to prevent fire damage to safe shutdown cabling located above the system sprinkler heads. This issue is in the licensee’s corrective action program as AR 73402 and has been designated a Non-cited Violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. It is identified as NCV 50-325,324/02-03-01, failure to have installed fixed fire suppression systems that are capable of minimizing fire damage to safe shutdown cabling during floor level transient combustible fires in the Unit 1 and Unit 2 CSRs.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the licensee’s external flooding analysis as described in UFSAR section 3.4, “Water Level (Flood) Design,” to determine the critical features for external flood control. The inspectors reviewed NCV 50-325/324 00-04-01 concerning inadequate corrective action associated with the flooding of manholes to determine the previous history. The inspectors reviewed the results of manhole inspections conducted on July 1, 2002 under WO 241060 01 to determine if manholes with safety-related equipment were flooding during non-hurricane weather. The inspectors walked down the locations and numbers of portable sump pumps as defined in procedure 0AI-68, Brunswick Nuclear Plant Response to Severe Weather Warnings.

The inspectors reviewed the licensee’s internal flooding analysis, and selected the Diesel Generator Building (DGB) for detailed review. The building included the emergency diesel generators for both units. The inspectors reviewed the licensee’s

analysis of the effects of flooding resulting from postulated piping failures, as described in the UFSAR section 3.4, “Water Level (Flood) Design,” to determine whether that analysis contained reasonable assumptions and conclusions based on the current plant configuration. To verify that the procedures for coping with flooding can reasonably be used to achieve the desired actions for the DGB, the inspectors reviewed the associated procedures.

The inspectors performed a field walk-down of the DGB, to determine whether the physical configuration of the area was consistent with the assumptions in the documents. The inspectors considered sealing of penetrations below the flood line, adequacy of watertight doors, level switches (from procedure 2APP-UA-28) and associated sump pumps, and sources of internal flooding. The inspectors reviewed the results of DGB door inspections conducted on January 7, 2002 and DGB trench level switch inspections conducted under WOs 45871, 45867, 45872, and 172678. Documents reviewed for this section are listed in the attachment to this report.

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 2002-04 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 a primary uninterruptible power supply and an anticipated transient without a scram (ATWS). 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. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

For the equipment issues described in work orders (WO) and action requests (AR) 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 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:

- Unit 1,1A-2 Battery Cells, performance criteria exceeded for cells 1, 3, and 8 (Second Quarter 2002)
- Unit 1, Instrument Air Supply to the Main Steam Isolation Valves (MSIVs), MSIV instrument air supply check valve repeat Maintenance Rule Functional Failure (MRFF) (Second Quarter 2002)
- Unit 1, Inadvertent closure of excess flow check valve (EFCV) 1-B21-F049D (Second Quarter 2002)
- Unit 1, XU-67 Reactor Protective System inverter failure (AR 63099)
- MR Repetitive Functional Failure on Diesel Generators 2 and 4 Air Start Intercoolers
- Unit 1 and 2, Nuclear Service Water Unavailability

Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For the following system work weeks, WO packages and/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:

- Units 1 and 2, Circulating Water Trash Rack and Traveling Screen High Differential Pressure due to Fouling
- Unit 1, Failed Power System Stabilizer/Unit's 1 and 2 Cumulative Risk Assessment
- Units 1 and 2, Work Week 30 Activities
- Diesel Generator 4 Cylinder Liner Replacement
- Unit 2, Remote Shutdown Display Panel Safety Relief Valve Switch Replacement

Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

Unit 1 Condensate System Transient (Second Quarter 2002)

a. Inspection Scope

Personnel performance was evaluated by the inspectors on May 29, during a Unit 1 condensate system transient. In support of the condensate pump logic modification, the 1B condensate pump was started and the 1A condensate pump was secured. Condensate system pressure immediately dropped to 75 psi and the condensate booster pump suction pressure dropped to 10 psi, resulting in the 1A and 1B condensate booster pumps tripping on low suction pressure. The 1C condensate booster pump automatically started after its discharge valve stroked closed and the 1A condensate pump was restarted. The licensee entered Abnormal Operating Procedure 0AOP-23, Condensate/Feedwater System Failure. Reactor power was reduced to 92 percent with recirculation flow and reactor water level decreased to 174 inches during the two minute transient.

The inspectors were present in the control room during the recovery from this abnormal occurrence. The inspectors reviewed operator logs, plant computer data and strip charts to determine how the operators responded to the event and to determine if operator responses were in accordance with the required procedure. The inspectors observed meetings concerning recovery actions, as well as, corrective action planning meetings. The inspectors monitored recovery actions while returning the unit to 100 percent. Documents reviewed are listed in the attachment to this report.

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 compensatory measures; (4) where compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; (5) where continued operability was considered unjustified, the impact on Technical Specification (TS) limiting conditions for operations (LCOs) and the risk significance in accordance with the SDP. These reviews were performed for the following:

- Unit 1, HPCI Turbine Exhaust Rupture Discs Incorrectly Installed
- Diesel Generator 3 “Burned-out” Relay Associated with Low Lube Oil Pressure
- Unit 2, Suppression Chamber to Drywell Vacuum Breaker, 2-CAC-X18I, Indication Problem

Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The Inspectors reviewed a permanent plant modification that replaced the Safety Relief Valve (SRV) remote manual control switches with two position switches, located on the Remote Shutdown Panel. The inspectors reviewed the design adequacy of the modification for material compatibility which included functional properties, environmental qualification, and classification. The inspectors verified that the replacement switch performance characteristics met the design bases and the appropriateness of design assumptions. The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions and key safety functions. The inspectors reviewed the modification to verify that the post-modification testing would establish operability and that unintended system interactions would not occur. The inspectors reviewed the modification to verify that testing demonstrated that the modification acceptance criteria were met. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the post-maintenance tests 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. Documents reviewed are listed in the attachment to this report.

- Unit 2, Electrical Backseating 2-B32-F031A (2A Recirculation Pump Discharge Valve) to Reduce Drywell Leakage
- Unit 1, Failure of CST Level Switch 1-E41-LSL-N003
- Diesel Generator 4, Cylinder Head Installation
- Diesel Generator 2, Jet Assist Solenoid Valve Replacement

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated Unit 1 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. Documents reviewed are listed in the attachment to this report. The following specific areas were reviewed:

- 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 reviewed the licensee's contingency actions for losses of key safety functions and to verify that the licensee maintained key safety function status and controls continuously throughout the outage. The inspectors reviewed the Unit 1 outage risk assessment, B114M1 Refueling Outage Safe Shutdown Risk Assessment.

- Monitoring of Shutdown Activities. The inspectors reviewed the TS cooldown restrictions to verify that they were met in accordance with Periodic Test 2PT-01.7, Heatup/Cooldown Monitoring, and reviewed Special Process Procedure 0SPP-RPV501, Reactor Vessel Disassembly.

- 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. The inspectors reviewed Administrative Procedure 0AP-022, BNP Outage Risk Management.

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

- Reactivity Control. The inspectors reviewed reactivity control to verify that proper control was maintained in accordance with the TS. Potential reactivity changes were identified in the outage risk plan and were reviewed to verify proper controls.

- Refueling Activities.The inspectors reviewed fuel handling operations to verify they were performed in accordance with TS and fuel handling procedures. The inspectors reviewed the position of the fuel bundles that were moved during the core fuel shuffle to verify they were in the correct position and orientation. The inspectors observed several fuel handling moves in the vessel area and spent fuel pool area. Additionally, the inspectors reviewed a video tape of the inspection of the Steam Dryer, which was performed during this outage.

- Monitoring of Heatup and Startup Activities. The inspectors reviewed TS, license conditions, commitments, and administrative procedure prerequisites for mode changes to verify they were met for changing plant configurations. The inspectors observed reactor startup and major portions of the power ascension.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors examined the 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 its intended function and was operable in accordance with TS. Documents reviewed are listed in the attachment to this report. The following tests were reviewed:

- Unit 2, Maintenance Surveillance Test, 2MST-SW12Q, SW Diesel Generator Cooling Water Supply Low Pressure Inst Cal and Functional Test (Second Quarter 2002)
- Unit 1, 1MST-OPRM21R, Oscillation Power Range Monitor (OPRM) Tuning (Second Quarter 2002)
- Unit 1, Periodic Test, 0PT-02.3.1, Suppression Chamber to Drywell Vacuum Breakers Operability Test
- Unit 2, 0PT-12.2C, No. 3 Diesel Generator Monthly Load Test
- Unit 1,1MST-HPCI27Q, HPCI and RCIC CST Low Water Level Instrument Channel Cal
- Unit 1, Periodic Test, OPT-10.16.L, Remote Shutdown Panel RCIC Flow Controller Local Control Operability Test
- Unit 2, 2MST-APRM28Q, APRM Flow Bias Flow Units A & B Channel
- Unit 1, Periodic Test, 0PT-08.2.2b, LPCI/RHR System Operability Test- Loop B (IST)

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency response training drill conducted on July 16, August 13 and August 27, to evaluate drill conduct and the licensee's post-drill critique. The drills were conducted using the plant simulator and emergency facilities. The inspectors evaluated licensee's self-assessment of classification, notification, and protective action recommendation development.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety (OS)

2OS3 Radiation Monitoring Instrumentation

.1 Area Radiation Monitors

a. Inspection Scope

Operability of radiation monitors associated with transient high and very high radiation areas, including those for potential use in remote emergency assessment, was evaluated. The inspectors evaluated operability through review of current calibration records, alarm set-points, and alarm source checks for selected Unit 1 and Unit 2 containment high radiation area monitors, spent fuel pool building monitors, and a radwaste area radiation monitor. During plant tours the inspectors also evaluated the use of continuous air monitors. Documents reviewed and area radiation monitors evaluated are listed in the attachment to this report. Licensee program activities were reviewed against the UFSAR.

b. Findings

No findings of significance were identified.

.2 Portable Survey Instrumentation

a. Inspection Scope

Current program guidance, including calibration and operation procedures, and its implementation to maintain operability and accuracy of selected portable survey instruments was reviewed and evaluated at the Harris Nuclear Plant calibration facilities used by the licensee. During the week of July 8, 2002, the inspectors reviewed current

calibration data for selected personnel survey instruments and assessed operability of various portable survey instruments ready for use. Responsible staff's knowledge and proficiency regarding portable survey instrumentation calibration activities were evaluated through interviews, record reviews, and direct observation of an RO-2 portable survey instrument calibration. The inspectors assessed licensee program activities for portable instruments received from the licensee and found to be out-of-calibration/tolerance.

During the week of July 22-26, 2002, the inspectors reviewed the accuracy, operability, calibration data records, and storage of various types of portable survey instruments staged for use. The inspectors observed daily instrument checks of an RO-2A and a teletector used to perform surveys in high radiation areas.

Radiation protection technician proficiency and knowledge regarding the use of portable survey instrumentation were observed. Technician proficiency and knowledge regarding use of portable survey meters were evaluated through observations of instrument types selected and conduct of operability checks prior to performance of radiological surveys and monitoring.

The inspectors evaluated the operability and response of the whole body friskers and portal monitors utilized for monitoring personnel released from the radiologically controlled area. Whole body counter calibration procedures and records were reviewed to evaluate the licensee's capability for assessing internal intakes of radioactive byproduct materials.

Licensee activities associated with personnel radiation monitoring instrumentation were reviewed against TS, 10 CFR Part 20.1501, and Health Physics Nuclear Generating Group Corporate Procedure - 0005. Calibration of Portable Radiation/Contamination/Air Sampling Survey Instruments, Rev. 2. The licensee's program for assessing intakes of radioactive byproduct material was evaluated against 10 CFR Part 20.1204. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

.3 Protective Equipment Respiratory Protection - Self Contained Breathing Apparatus (SCBA) Equipment

a. Inspection Scope

The inspectors evaluated the licensee's implementation of the respiratory protection program and reviewed the status of SCBAs staged for use in the plant. The inspectors reviewed physical qualification records, training records and fit test records for workers and interviewed personnel to determine their level of knowledge of SCBA equipment storage locations and proper use. The SCBAs staged for control room emergency use were inspected for general condition, proper air pressure, and correct number of units available. Licensee procedures and training lesson plans related to respiratory protection use and maintenance were also evaluated and discussed with licensee

representatives. In addition, licensee capabilities for transporting additional air bottles to the control room and the Technical Support Center (TSC) were evaluated. Documents reviewed are listed in the attachment to this report.

Training and maintenance activities associated with SCBA equipment were evaluated against 10 CFR 20.1703 and the licensee's UFSAR and Emergency Plan Descriptor.

b. Findings

An unresolved item (URI) was identified associated with the adequacy of written procedures for the SCBA training program in that the program did not require all designated SCBA users to demonstrate proficiency in SCBA air bottle change-out.

The inspectors determined, through review of training documentation for the period between January 1, 2001 and July 22, 2002, and interviews with personnel, that not all emergency response workers designated as SCBA users, including non-fire brigade trained reactor operators, shift technical advisors, and health physics, chemistry and maintenance technicians, had been required to demonstrate proficiency in SCBA bottle change-out. The training for SCBA bottle change-out was provided in lesson plan FPT-CLSCLS-LP-1971 for fire brigade personnel and auxiliary operators trained as fire brigade members. However, lesson plan GN6C10G for non-fire brigade workers did not require instruction for SCBA qualified personnel on how to replace air supply bottles nor require them to demonstrate their ability to do so.

10 CFR Part 20.1703(c)(4)(ii) requires the licensee to implement and maintain a respiratory protection program that includes written procedures regarding training of respirator users. Pending further NRC review of the regulatory aspects of this issue, the failure of the licensee's training program to include demonstration of proficiency in changing SCBA cylinders is identified as an unresolved item (URI) 50-325,324/02-03-02, failure of SCBA training program to include demonstration of proficiency in SCBA cylinder change-out. This issue has been entered into the licensee's corrective action program as Action Request (AR) 67106.

.4 Problem Identification and Resolution

a. Inspection Scope

Licensee corrective action program documents associated with radiation monitoring program activities were reviewed. Five ARs identified within this program area listed in the attachment to this report were reviewed and evaluated in detail. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues.

b. Findings

No findings of significance were identified.

Cornerstones: Public Radiation Safety (PS)

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

.1 Effluent Processing Equipment

a. Inspection Scope

The operability, availability, and reliability of selected effluent process sampling and detection equipment used for routine and accident monitoring activities were reviewed and evaluated. Inspection activities included record reviews of functional test and calibration data and direct observation of equipment installation and operation. The following effluent monitoring equipment was included in the inspection:

- Main Stack Wide Range Gaseous Effluent Monitor (2-D12-RM-23S)
- Liquid Radwaste Effluent Monitor (2-D12-RM-K604)

During the week of July 22, 2002, the inspectors directly observed process effluent monitoring equipment material condition, installed configurations (where accessible), and operability. Liquid radwaste system components were examined from the drain tanks, through the radwaste effluent monitor, and out to the discharge point. Major components of the Augmented Off-Gas (AOG) system were inspected from the charcoal guard bed to the main stack monitor. The stack monitor particulate and iodine sampling head configuration was compared to vendor diagrams. In addition, a chemistry supervisor was interviewed regarding liquid and gaseous radwaste system configuration. Effluent monitor Control Room (CR) readouts were inspected for operability and CR personnel were interviewed regarding daily performance checks.

Program guidance, equipment configuration and material condition for the effluent sampling and monitoring equipment were reviewed against details documented in TS; UFSAR; 10 CFR Part 20, Offsite Dose Calculation Manual (ODCM), Rev. 25; ANSI-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; ANSI-N13.10-1974, ANS Specification and Performance of On-Site Instrumentation for Continuously Monitoring Radioactivity in Effluents, Vendor Manual, and approved procedures listed in the attachment to this report.

b. Findings

No findings of significance were identified.

.2 Effluent Release Processing and Quality Control Activities

a. Inspection Scope

During the week of July 22, 2002, the inspectors directly observed and evaluated chemistry staff proficiency in conducting weekly effluent sampling activities. The observations included particulate filter and charcoal cartridge change-out and noble gas sampling for the main stack wide-range monitor and airborne tritium sampling for the

Unit 2 reactor building vent monitor. The inspectors observed preparation and counting of the samples and interviewed technicians regarding detector dead-time and lower limits of detection (LLD).

Procedures for effluent sampling, processing, and reporting were reviewed. The inhalation and submersion doses reported in a weekly gaseous permit dated July 2-8, 2002 were compared to independent dose calculations. The 2001 annual effluent report was reviewed to identify any anomalous releases.

Quality control (QC) activities regarding gamma spectrometer and liquid scintillation detection equipment were discussed with count room technicians. The inspectors reviewed records of daily QC checks and trending data for 50 percent of the GeLi gamma spectrometers and for the single liquid scintillation counting instrument. Results of the radiochemistry interlaboratory cross-check program were reviewed for the year 2000. The inspectors interviewed a lead chemistry technician regarding AOG air cleaning equipment QC activities and system availability.

Program guidance and material condition for the effluent sampling and monitoring equipment were reviewed against details documented in 10 CFR Part 20, UFSAR Chapter 11, and the ODCM. Observed task evolutions and offsite dose results were evaluated against 10 CFR Part 20 requirements, Appendix I to 10 CFR Part 50 design criteria, ODCM, and applicable procedures as documented in the attachment to this report.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

Licensee ARs associated with effluent monitoring program activities were reviewed. Four ARs identified within this program area listed in the attachment of this report were reviewed and evaluated in detail. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP)

.1 Environmental Monitoring

a. Inspection Scope

During the week of July 22, 2002, the inspectors toured selected REMP air sampling equipment and direct radiation monitoring stations. Material condition of air sampling

equipment and placement of thermoluminescent dosimeters were evaluated at seven locations. Sampling station positions were independently verified using NRC Global Positioning System equipment. Calibration records for nine environmental air samplers were reviewed. The inspectors reviewed and discussed with licensee personnel the results published in the Brunswick Annual Radiological Environmental Operating report for calendar year (CY) 2001 and the land use census report for CY 2002.

The inspectors reviewed the operability of the meteorological monitoring equipment and operator access to meteorological data. Current meteorological monitoring equipment performance and calibration were reviewed with the system engineer. Licensee technicians primarily responsible for equipment maintenance and surveillance were interviewed by the inspectors concerning equipment performance, reliability and routine inspections. The inspectors reviewed environmental activities to evaluate compliance with the ODCM, TS, UFSAR, Safety Guide 23, and 10 CFR Part 20 requirements.

During the week of June 17, 2002, analytical laboratory activities conducted by Harris Energy and Environmental Center (HEEC) to analyze the licensee's REMP samples were reviewed and evaluated. The inspectors reviewed and evaluated procedural guidance and its implementation; instrument calibration and performance checks for gamma spectroscopy, liquid scintillation counting, and gross beta analysis instrumentation; and assessed knowledge and proficiency through interviews of responsible staff. In addition, laboratory analysis QC activities were reviewed and evaluated including inter-laboratory sample comparison results; analytical measurement instrumentation performance checks and background determinations; analysis sensitivities and LLD capabilities for gamma spectroscopy analyses and gross beta analyses; and sample preparation.

Program guidance for the analytical laboratory activities were reviewed against TS, 10 CFR Part 20, ODCM, and applicable procedures as documented in the attachment to this report. Laboratory QC activities were evaluated against Regulatory Guide (RG) 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials In Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants, June 1974; and RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) -- Effluent Streams and the Environment, February 1979.

b. Findings

No findings of significance were identified.

.2 Unrestricted Release of Materials from the Radiologically Controlled Area (RCA)

a. Inspection Scope

The inspectors reviewed selected program procedures and observed surveys of potentially contaminated materials released from the RCA to assess the licensee's effectiveness in preventing the improper release of radioactive material for unrestricted use. The radionuclides identified within recent waste stream analyses were compared against current calibration source radionuclide types and results to evaluate the

appropriateness and accuracy of release survey instrumentation. Licensee data to evaluate survey requirements for hard-to-detect radionuclides were reviewed and discussed.

The licensee practices and implementation of their monitoring activities were evaluated against 10 CFR Part 20, TS, UFSAR, and applicable procedures documented in the attachment to this report.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

Seven ARs associated with effluent monitoring program activities documented in attachment to this report were reviewed and evaluated in detail. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP3 Response to Contingency Events

. 1 Threat Advisory

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

.2 Intrusion Detection Systems (IDS)

a. Inspection Scope

The inspectors evaluated the protected area IDS required by the Physical Security Plan (PSP) to determine if vulnerabilities existed. On August 6, 2002, 14 intrusion detection zones were selected based on a visual assessment of their potential predictability and vulnerability for intrusion by the design basis adversary, and performance tested by NRC contractors to assess the licensee's ability to detect penetration into the zones. The inspectors also directly observed the licensee's IDS operational and performance testing to evaluate compliance with and the adequacy of Procedure OSI-12, Maintenance and Testing of Security Systems. IDS maintenance records for the period August 2001 to July 2002 were reviewed to determine whether maintenance activities were being performed in accordance with licensee procedures and to assess and trends in IDS zone unavailability and the adequacy of preventive maintenance practices. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified

.3 Intrusion Assessment Aids

a. Inspection Scope

The inspectors evaluated the capability and quality of licensee's intrusion assessment aids against the PSP to determine if the alarm station operators in both the Central Alarm Station (CAS) and Secondary Alarm Station (SAS) could clearly recognize a threat in the intrusion detection zones. On August 9, 2002, the inspectors assessed seven zones through performance testing which were selected based on their predictability and vulnerability to potential exploitation by a design basis adversary. Video monitors in the CAS and SAS were also observed to evaluate the impact of picture quality on the ability of the CAS/SAS operators to assess intruders. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

.4 Weapons Demonstration

a. Inspection Scope

On August 7, 2002, the inspectors evaluated security staff tactical firearms proficiency through observation of a range demonstration by seven individuals who were randomly selected by the inspectors. The inspectors observed the weapons demonstration to evaluate the capability of the selected individuals to effectively engage the targets using appropriate weapons from behind each type of plant defensive positions used as part of the licensee's defensive strategy. The inspectors observed the individuals engaging both fixed and moving targets.

The inspectors evaluated the training records of ten individuals to determine whether required weapons training had been conducted and documented in accordance with requirements of 10 CFR 73.55, Appendix B and the licensee's Security and Training Qualification Plan.

b. Findings

No findings of significance were identified.

.5 Response Strategy Evaluation

a. Inspection Scope

The licensee's security strategy was evaluated to determine it's effectiveness against the Design Basis Threat (DBT). The licensee provided an overall briefing of their response strategy, including target sets, defensive positions, operations and local law enforcement agency (LLEA) interface, and response time lines. The inspectors toured the Protected Area and vital areas during which locations and numbers of responders were assessed, as well as the adequacy of defensive positions. Weapons and equipment were evaluated and security force members were interviewed to determine their level of familiarity with individual responsibilities in implementing the response strategy. Four table top exercises were conducted where the inspectors observed integration of the actions in response to Information Notice 98-35 and post September 11, 2001, NRC advisories on to the licensee's overall response strategy. These and other aspects of the strategy were evaluated against the requirements of the Brunswick PSP and Contingency Response plans. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed the performance indicator (PI) data submitted to the NRC in July 2002, since the last verification inspection was performed. A sample of the plant records and data was reviewed and compared to the reported data to check for the accuracy of the performance indicators. The licensee's corrective action program records were also reviewed to determine if any problems with the collection of PI data had occurred. Documents reviewed are listed in the attachment to this report. The inspectors reviewed the following PIs for the period from September 2001 to June 2002 to determine their accuracy and completeness against the requirements in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2.

- Safety System Unavailability, Heat Removal System (RCIC)
- Safety System Unavailability, Residual Heat Removal System
- Safety System Functional Failures

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed a sample of corrective action issues. This sample was chosen using information obtained from reviews conducted as part of the baseline inspection procedure attachments. The inspectors evaluated the effectiveness of the licensee corrective actions for a particular issue by reviewing the licensee's actions against the nature and significance of the identified problem. In addition, the following attributes were considered during this review: 1) complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery; 2) evaluation and disposition of operability/reportability issues; 3) consideration of extent of condition, generic implications, common cause, and previous occurrences; 4) classification and prioritization of the resolution of the problem commensurate with its safety significance; 5) identification of root and contributing causes of the problem; 6) identification of corrective actions which are appropriately focused to correct the problem; and 7) completion of corrective actions in a timely manner commensurate with the safety significance of the issue. Documents reviewed are listed in the attachment to this report. The following ARs were reviewed:

- AR 43769, NAS Round Robin Assessment of ISI/IST
- AR 44684, Unit 1, 1B-2 Battery degradation
- AR 44722, Corrective Action Effectiveness

b. Findings

No findings of significance were identified.

4OA5 Other Activities

Physical Protection of Irradiated Fuel Shipments

a. Inspection Scope

The inspectors evaluated the licensee's planning and in-transit activities related to a shipment of irradiated fuel. Planning activities reviewed included the utility's written notification to State officials at least seven days prior to the shipment, the utilization of a route approved by the NRC, coordination with local law enforcement agencies in locations along the route to ensure prompt emergency support if needed, and the limiting of intermediate stops during the shipment. The inspectors also reviewed the training and qualification of escorts utilized for the shipment.

The inspectors directly observed and evaluated the protection provided for the irradiated fuel as it was removed from the shipper's Protected Area (PA) and as it was placed into the PA of the recipient. Licensee security practices and escort procedures were also evaluated throughout the shipment, including adequacy of security during in route stops, and escort safety briefings provided to rail engineers. The inspectors also evaluated whether a communications center continually monitored the progress of the shipment while in-transit.

The shipment activities were evaluated against the requirements of 10 CFR 73.37, Physical Protection Requirements of Irradiated Fuel In-Transit Requirements, and Licensee Nuclear Generating Group Standard Procedure NGGM-PM-0006, Spent Fuel Shipping Program Manual, Revision 6, and the recommended actions described in NRC Information Assessment Team Advisory, Recommendation for Shipment of Non-Power and Power Reactor Irradiated Reactor Fuel, issued on December 13, 2001.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. James Scarola, Vice President Harris Nuclear Project and other members of licensee management at the conclusion of the inspection on October 7, 2002.

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

SUPPLEMENTARY INFORMATION

A. Key Points of Contact

Licensee Personnel

D. Braund, Security Manager, Harris Nuclear Plant
A. Brittain, Manager Security
W. Dorman, Manager Nuclear Assessment
C. Elberfeld, Licensing Assistant
J. Ferguson, Superintendent, Environmental and Chemistry Programs
N. Gannon, Director of Site Operations
J. Gawron, Training Manager
L. Hayes, Progress Energy Corporate Security
D. Hinds, Manager Brunswick Engineering Support Section
D. Holder, Superintendent, Radiological Control Programs
J. Keenan, Site Vice President
L. Kuffel, Engineer
B. McLendon, Chemistry Supervisor
E. O'Neil, Manager Site Support Services
W. Noll, Plant General Manager
S. Tabor, Regulatory Affairs
E. Quidley, Manager Maintenance
H. Wall, Manager Outage and Scheduling
M. Williams, Manager Operations
T. Ward, Maintenance Rule Coordinator

NRC Personnel

B. Bonser, Chief, Reactor Projects Branch 4
M. Shannon, Acting Chief, Reactor Projects Branch 4

Other Personnel

M. Dalton, North Carolina State Patrol, WMD Coordinator

B. Items, Opened, Closed, and Discussed

Opened

50-325, 324/02-03-02	URI	Failure of SCBA training program to include demonstration of proficiency in SCBA cylinder change-out. (Section 2OS3.3)

Attachment

Opened and Closed

50-325,324/02-03-01	NCV	Failure to have installed fixed fire suppression systems that are capable of minimizing fire damage to safe shutdown cabling during floor level transient combustible fires in the Unit 1 and Unit 2 CSRs. (Section 1R05)

C. List of Documents Reviewed

Section 1R04

- Operating Procedure 1OP-19, High Pressure Coolant Injection System Operating Procedure,
- UFSAR Section 6.3
- Work Order 291733, 1-E41-C002, Oil Leak on HPCI Turbine Aux Oil Pump
- Drawing D-25023
- Operating Procedure 1OP-39, Diesel Generator Operating Procedure
- Operating Procedure 1OP-17, Residual Heat Removal System Operating Procedure

Section 1R05

- Plant Operating Manual, Prefire Plan, 2PFP-RB, Reactor Building Prefire Plans
- Prefire Plan 2PFP-RB2-1g N, Reactor Building North 20 foot elevation
- Prefire Plan 2PFP-RB2-1g S, Reactor Building South 20 foot elevation
- Prefire Plan 2PFP-RB2-1a, South Core Spray Room -17 foot elevation
- Prefire Plan 2PFP-RB2-1b, North Core Spray Room -17 foot elevation
- Plant Operating Manual, Prefire Plan, 0PFP-PBAA, Power Block Auxiliary Areas Prefire Plans (SW,RW,AOG,TY,EY)
- AR 66899, Deficiencies Associated with Radios used in Planned Fire Drill
- R0110-02-0002.01, Brunswick Nuclear Plant Cable Spreading Room Fire Suppression System Response Time Final Report

Section 1R06

- 0AOP-13.0, Operation During Hurricane, Flood Conditions, Tornado, or Earthquake
- 0AOP-18.0, Nuclear Service Water System Failure
- 0AI-68, Brunswick Nuclear Plant Response to Severe Weather Warnings
- 2APP-UA-28, Annunciator Procedure for Panel UA-28, Windows 3-6, 3-7, 3-8, 4-6, 4-7, 5-8, 5-9, 6-8, 6-9

Section 1R11

- LOI and LOCT Core Simulator Scenario, LOT-EOP-030, Loss of UPS, ATWS

Section 1R12

- Expert Panel a(1) System Review, 5/7/02, 1A-2 Battery Cells, performance criteria exceeded for cells 1, 3, and 8
- Expert Panel a(1) System Review, 5/9/02, U1 Instrument Air Supply to the MSIVs, MSIV instrument air supply check valve repeat MRFF
- Licensee White Paper, Excess Flow Check Valve (EFCV) Failure date 12/13/01
- Expert Panel a(1) System Review, 6/5/02, Unit 1 Instrument Air Isolation from Nitrogen Backup
- Expert Panel a(2) System Review, 8/7/02, Nuclear Service Water Unavailability Criteria Revision
- Maintenance Rule a(1) Action Plan for System 5112, D/G Starting Air
- Maintenance Rule a(1) Action Plan for System 6135, Instrument Air Back-up Nitrogen
- Work Order 239718-01, DG #2 Starting Air Intercooler Tube Leak
- AR 58984, Failure on D/G #2 Air Start Intercooler
- AR 25054, Repetitive Functional Failure on D/G #4 Air Start Intercooler
- AR 54855, Chlorine Leak in Chlorination System
- AR 60901, Basis for Nuclear Service Water Unavailability

Section R13

- AR 65232 Units 1 and 2 Circulating Water Trash Rack Fouling
- AR 66530 Unit 1 Failed Power System Stabilizer
- WO 291790
- BNP Risk Profile Week 30, July 29 - August 2, 2002
- ADM-NGGC-0101, Rev 13, Maintenance Rule Program

Section 1R14

- Abnormal Operating Procedure 0AOP-23, Condensate/Feedwater System Failure
- System Discription SD-32, Condensate Feedwater System

Section 1R15

- AR 63376 Unit 1 HPCI turbine exhaust rupture discs incorrectly installed
- Operability Evaluation: OI-01.0.8
  WO 133967
- AR 53955, No. 3 Diesel Generator “Burned-out “ relay
  WO 207922
- Plant Operating Manual Periodic Test, 0PT-02.3.1, Suppression Chamber to Drywell Vacuum Breaker Operability Test

Section 1R17

- DR No 89-0215, Direct Replacement Evaluation

Section 1R19

- Plant Operating Manual, Special Process Procedure, 0SPP-MO001, Electrically Backseating of AC Motor Operated Valves using the Motor Operator, Rev 7
- NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, April 1995
- BNP-MECH-B32-F031A/B, Mechanical Analysis and Calculation of Reactor Recirculation Pump Discharge Valves
- WO 291460
- AR 66766, Failure of CST Level switch 1-E41-LSL-N003
- Plant Operating Manual Periodic Test, 0PT-12.2D, No.4 Diesel Generator Monthly Load Test
- Plant Operating Manual Plant Program Procedure, 0PLP-20, Post-Maintenance Testing Program
- Plant Operating Manual Periodic Test, 0PT-12.3.2B, No. 2 Diesel Generator Starting Air Valve Operability Test

Section 1R20

- Fuel Handling Procedure 0FH-11N, Control Rod Shuffle
- Fuel Handling Procedure 0FH-11, Refueling
- Special Process Procedure 0SPP-RPV502, Reactor Vessel Reassembly
- Engineering Procedure 0ENP-24.13, Core Verification
- General Plant Operating Procedure 0GP-02, Approach to Criticality and Pressurization of the Reactor
- General Plant Operating Procedure 0GP-03, Unit Startup and Synchronization
- General Plant Operating Procedure 0GP-04, Increasing Turbine Load to Rated Power
- General Plant Operating Procedure 0GP-06, Cold Shutdown to Refueling (Head Unbolted)
- Administrative Instruction 0AI-127, Primary Containment Inspection and Closeout

Section 1R22

- Work Order 223936-01, Perform Applicable Sections of 2MST-SW12Q
- 0ENP-17, Pump and Valve Inservice Testing (IST), Rev 28
- ASME/ANSI OM-1987, “Operation and Maintenance of Nuclear Power Plants” with OMa-1988 Addenda, Part 10
- AR 66766, Failure of CST Level switch 1-E41-LSL-N003
- AR 66828, Inadequate Pre-Job Brief For OPT-12.2C
- WO 266544

Section 2OS3

Procedures, Instructions, Lesson Plans, and Manuals

- DOS-NGGC-0020, Whole Body Counter (WBC) System Calibration, Revision (Rev.) 6
- 0E&RC-0344, Calibration And Use Of APTEC Personnel Monitors, Rev. 6
- GN6C10G, Respiratory Protection Training, Rev. 16
- 0FPP-039, SCBA Use And Maintenance, Rev. 10

- 0FPP-007, Control And Use Of Fire Fighting Equipment, Rev. 18
- FRPT-CLS-LP-1971, Fire Brigade Personal Protective Equipment/SCBA, Rev. 0
- 0E&RC-0115, Use And Calibration Of The Small Article Monitors, Rev. 9
- 0AOP-34.0, Chlorine Emergencies, Rev. 20
- 0FPP-038, Operation Of The SCBA Refill System, Rev. 2
- RPT SSG, Student Handout For Respiratory Training, 12/18/01
- RC03.04B, Operate Portable Radiation Detection Equipment, Rev. 0
- 0PFF-CB, Control Building Prefire Plans, Rev. 1
- FPT-CLS-LP-1971, Lesson Plan Skill Sheet, Rev. 0
- 0MST-AM122R, AMI Post Accident High Range Continuous Radiation Monitor Channel Calibration, Rev. 2
- 0MST-AM122R, AMI Post Accident High Range Continuous Radiation Monitor Channel Calibration, Rev. 2
- 0MST-AM123R, AMI Post Accident High Range Continuous Radiation Monitor Channel Calibration, Rev. 2
- 0MST-AM124R, AMI Post Accident High Range Continuous Radiation Monitor Channel Calibration, Rev. 2

Area Radiation Monitors Evaluated

- Unit 2 Refuel Floor Area Radiation Monitor, 1-D22-RM-K600-2-29, 06/13/01
- Unit 2 Refuel Floor Area Radiation Monitor, 2-D22-RM-K600-2-29, 06/13/01
- Unit 1 Containment High Range Monitor, 1-D22-R1-4198, 01/17/02
- Unit 1 Containment High Range Monitor, 1-D22-R1-4196, 01/16/02
- Unit 2 Containment High Range Monitor, 2-D22-R1-4196, 01/31/02
- Unit 2 Containment High Range Monitor, 2-D22-R1-4197, 02/05/02
- Unit 2 Containment High Range Monitor, 2-D22-R1-4195, 02/05/02
- Radwaste Area Radiation Monitor, 2-D22-ES-K603A, 06/13/01

Action Request (AR documents)

- AR-56146, Teletector Failed Source Check
- AR-56694, Contractor Alarmed Portal Monitor
- AR-58511, RO-2 Source Check Failure
- AR-60747, Respirator Fit Test Not Performed
- AR-67106, SCBA Training For Bottle Change-out

Section 2PS1

Procedures, Instructions, Lesson Plans, and Manuals

- 0RST-71.0, General Atomic Stack Radiation Monitor Channel Calibration (2-D12-RM-23), Rev. 7
- 0E&RC-1231, Sampling and Analysis for Tritiated Water in Airborne Effluents, Rev. 17
- 0E&RC-1214, Monthly Source Check of Process Radiation Monitors, Rev. 10
- 0E&RC-2002, Sampling of Radioactive Airborne Effluent Releases, Rev. 36

- 0E&RC-2003, Reporting of Radioactive Airborne Effluent Releases, Rev. 24
- 0E&RC-1271, Determination of the Lower Limit of Detection for Counting Systems, Rev. 17

Equipment Performance Records

- 0RST-71.0, General Atomic Stack Radiation Monitor Channel Calibration (2-D12-RM-
- 23S), data sheets, 03/11/00, 06/23/00, 10/19/00, and 08/26/01
- 0MST-RGE14Q, RGE Main Stack EFF Flow Rate Monitoring SYS FUNCT Test, data
- sheet, 03/15/02
- 0MST-RLE22R, Radwaste Liquid Effluent Monitor Channel Calibration, data sheet,
- 11/01/01
- 0MST-RLE11Q, RLE LIQ Radwaste Effluent Flow Monitor Channel CAL and Functional
- Test, data sheet, 02/21/02

Radioactive Release Reports

- Brunswick Steam Electric Plant Radioactive Effluent Release Report for 2001
- Weekly gaseous effluent release report for the period 07/02/02 - 07/08/02
- Monthly liquid effluent release report for June, 2002

Miscellaneous Documents

- Brunswick Steam Electric Plant Offsite Dose Calculation Manual, Rev. 25
- Radiochemistry Cross-Check Program 2000 Summary Report.
- Sorrento Electronics Wide Range Gaseous Monitor Filter Assembly (diagrams).
- UFSAR Chapter 11, Radioactive Waste Management, Rev. 17
- Certificate of Radioactivity Calibration, transfer source # 82-1432 (Cl-36 source)

Action Requests (ARs)

- AR # 64543, AOG bypassed due to hi-hi hydrogen alarm, 07/02/02
- AR # 65741, AOG bypassed during swap of air ejector trains, 07/12/02
- AR # 66274, service water leaking into component cooling water system, 07/18/02
- AR # 67031, evaluation of airborne effluent sampling techniques, 07/25/02

Section 2PS3

Procedures, Instructions, Lesson Plans, and Manuals

- POM VOLUME VIII, E&RC - 3101, Radiological Environmental Monitoring Program, Rev. 22
- POM VOLUME VIII, E&RC - 3102, Radiological Environmental Operating Report, Rev. 6
- POM VOLUME VIII, E&RC - 3104, Land Use Census, Rev. 6
  POM VOLUME VIII, E&RC-3107, Calibration and Use of Environmental Air Samplers, Rev. 5
- POM VOLUME VIII, E&RC - 4261, Revisions To The Off Site Dose Calculation Manual

Specifications (ODCMS) & PROCESS Control Program (PCP), Rev. 6
- NUCLEAR GENERATION GROUP VOLUME 99, EVC-NGG-005, Preparation of BNP, HNP, and RNP Annual Radiological Environmental Operating Report, Rev. 0
- 2001 BSEP Radiological Environmental Operating Report, March 26, 2002
- Offsite Dose Calculation Manual (ODCM), Rev. 25
- Environmental & Chemistry Qualification Checkout Card, Calibrated/Maintain Environmental Samplers, 05/30/00
- Nuclear Generation Group Standard Procedure ENV-NGGC-009, Determination of Tritium Activity in Aqueous or Solid Samples, Rev. 1.
- Nuclear Generation Group Standard Procedure ENV-NGGC-010, Determination of Gross Alpha and Beta Activities, Rev. 0.
- Nuclear Generation Group Standard Procedure ENV-NGGC-0011, Determination of Radiodine in Milk, Water, and Charcoal, Rev. 0
- Nuclear Generation Group Standard Procedure ENV-NGGC-012, Preparation and Counting of Samples for Determination of Gamma Activity, Rev. 0

Records

- Harris Energy and Environmental Center (HEEC) Environmental Cross Check Program Results, Quarters 1 through 4, Calender Year 2001.
- Quality control (QC) data for the following HEEC analytical instrumentation:
  -Gamma Analysis System Detectors 1, 2, 5, 6 including May 1, 2002, through June 19, 2002, background data, selected energy performance check results, and peak resolution values
  -Tennelec Alpha/Beta Counting System Serial Number (S/N) 35869 QC May1, 2002, through June 11, 2002, Daily reliability alpha and beta source and background check data and graphs
  -Liquid Scintillation Counting System S/N 428 and S/N 404281 QC May1, 2002, through June 11, 2002, monthly tritium efficiency data and daily background check data and graphs

Miscellaneous Documents

- Brunswick Land Use Census, Conducted from June 4 through June 7, 2002.
- Nuclear Utilities Procurement Issues Committee (NUPIC) audit report for Analytics, Inc., 06/14/02
- US Department of Commerce, National Institute of Standards and Technology, Certificate of Participation, Analytics Incorporated Atlanta, Georgia, January 1, 2002 through December 31, 2002, 05/08/02
- Meteorology Tower Equipment Calibration and Functional Test, 2/14/02
- Calibration Records Environmental Air Sampler BNP 1, 02/10/02
- Calibration Records Environmental Air Sampler BNP 2, 02/10/02
- Calibration Records Environmental Air Sampler BNP 3, 02/11/02
- Calibration Records Environmental Air Sampler BNP 4, 02/11/02
- Calibration Records Environmental Air Sampler BNP 5, 02/11/02
- Calibration Records Environmental Air Sampler BNP 6, 02/10/02
- Calibration Records Environmental Air Sampler BNP 7, 02/11/02
- Calibration Records Environmental Air Sampler BNP 8, 02/12/02
- Calibration Records Environmental Air Sampler BNP 9, 02/12/02

Action Requests (ARs) and Adverse Condition Investigations

- AR # 67072, Met Tower Tree Line Height, 07/25/02
- AR # 44775, Beta sample results for the weekly Environmental Air Sampler # 201 on 06/25/01 indicated higher than normal levels, 07/08/01
- AR # 64806, Missing Environmental TLD, 07/03/02
- AR # 53328, Missing Environmental TLD, 01/02/02
- AR # 49314, Environmental Air Sample Found Not Running, 10/06/01
- AR # 58682, Environmental Air Sample Found Not Running, 04/03/01
- Adverse Condition Investigation Form, During a NAS Assessment of the BNP Radiological Environmental Program, NAS identified several power cords for the Environmental Air Samplers were degraded. 05/02/02

Section 3PP3

- Brunswick Steam Electric Plant Physical Security and Safeguards Contingency Plan (sections relevant to the Intrusion Detection System and its maintenance and testing)
- Security Procedure 0SI-12, Maintenance and Testing of Security Systems
- Plant Procedure AOP-40.0, Security Events

Section 4OA1

- Control Room operating logs
- NRC Inspection Reports issued during the review period
- Licensee's data bases for the PIs listed above
- Nuclear Generating Group Standard Procedure REG-NGGC-0009, NRC Performance Indicator

Section 4OA2

- AR 61741, IST Program Non-Compliance to Surveillance Frequency
- Nuclear Generating Group Standard Procedure CAP-NGGC-0200, Corrective Action Program