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REGION II

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Report No: 50-325/97-05, 50-324/97-05

Licensee: Carolina Power & Light (CP&L)

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road SE
Southport, NC 28461

Dates: March 2 - April 12, 1997

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Enclosure 2

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EXECUTIVE SUMMARY

Brunswick Steam Electric Plant, Units 1 & 2
NRC Inspection Report 50-325/97-05, 50-324/97-05

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection; in addition, it includes the results of a radiological protection and chemistry controls by a regional inspector.

Operations

The present method of conducting an operation shift crew post turnover meeting was not effective to make the operators fully aware of plant changes and problems prior to assuming the shift responsibilities. (Section 01.1). The licensee was responsive to this concern and initiated changes to the shift turnover process for in-coming crews that had been off site for several days.

The licensee recalibrated the unit 1 feedwater flow instrumentation resulting in a power decrease due to conflicting test data. (Section 08.2). The instruments were recalibrated to the more conservative of ultrasonic flow test data and feed flow tracer data.

Maintenance

A violation was identified for failure to properly perform a surveillance test for the core spray sparger leak detector system. (Section M3.1). The normal range was defined in the procedure. However, the normal range had actually changed in the plant.

An inspection followup item was opened to review why the core spray sparger leak detection system normal differential pressure had shifted. (Section M3.1). This will be accomplished during the next refueling outage. The licensee's operability assessment concluded that the instrumentation would still be functional during a line break.

Good coverage of maintenance activities by maintenance line supervision and the health physics technician was observed during RCIC system maintenance activities. (Section M1.4). Adequate supervisory oversight and procedural use was observed during monthly diesel testing.

Maintenance activities with regards to securing wheeled equipment has improved. (Section M2.1). Further attention is needed in the area of foreign material exclusion around the spent fuel pool.

Engineering

A violation was identified for failure to take corrective action once notified of an error in the rod withdrawal accident analysis. (Section E2.1). A condition report was not initiated for this issue, that was subsequently determined reportable, until questioned by the inspector.

An unresolved item was identified covering issuance of a Notification of Enforcement Discretion concerning deletion of certain response time testing requirements. (Section E3.1)

Plant Support

Chemistry parameters were maintained well within TS and licensee administrative limits. The licensee's water chemistry control program for monitoring water quality at specified surveillance frequencies had been implemented in accordance with the licensee's TS requirements. (Section R1.1)

The licensee had maintained an effective program to monitor and control liquid and gaseous radioactive effluents and thereby limit doses to members of the public to a small percentage of regulatory limits. (Section R1.2)

The release of radioactive material to the environment from liquid and gaseous effluents for 1995 and 1996 was a small fraction of the 10 CFR 20, Appendix B and 10 CFR 50, Appendix I limits. (Section R1.2)

The projected offsite dose commitments which resulted from plant liquid and gaseous effluents were well within limits specified in the TSs and the Offsite Dose Calculation Manual (ODCM). (Section R1.2)

The results of planned licensee activities to reduce tritium in the stabilization pond will be reviewed in the future and tracked as an inspector followup item. (Section R1.2)

Radwaste minimization efforts were successfully reducing radwaste volume with a significant reduction in the rate of radwaste generation evident from 1996 to 1997 year to date. (Section R1.2)

The radiological controls program was being effectively implemented with generally good occupational exposure controls observed during normal plant operating conditions. (Section R1.3)

Good radiological control performance was apparent in specific work activities observed by the inspectors. (Section R1.3)

The licensee was effectively controlling operational site exposures to low levels during the period of inspection although sitewide dose performance for 1996, at 702 person rem, remained relatively high. (Section R1.3)

An unresolved Item was identified concerning the movement valve to a radioactive material storage area. (Section R1.3)

The licensee had implemented an effective program for packaging, preparation, and transport of radioactive material in accordance with regulatory requirements. (Section R1.4)

An unresolved item was identified to review licensee documentation to demonstrate compliance with 10 CFR Part 71.137 audit requirements. (Section R1.4)

An inspector followup item was opened for an audit finding concerning plant access searches. (Section S1.1)

Report Details

Summary of Plant Status

Unit 1 operated continuously during this period without any significant problems. A power adjustment was performed due to calibration of feedwater flow instrumentation. This is discussed in paragraph 08.2. At the end of the inspection period the unit had been on-line 156 days.

On November 1, 1996, the NRC approved amendments to the Brunswick operating licensee for a five percent increase in maximum licensed power level. Prior to operation at uprated power levels on Unit 1 the licensee identified errors in their submittals. The licensee committed to hold power at the previous maximum licensed power level until all issues were resolved. On March 18, 1997, the NRC completed its review of these problems and in a letter to the licensee did not object to operation of Brunswick to the uprate licensed maximum power. Power increase to the maximum power was contingent upon scheduling and completion of power ascension tests. At the end of this report period, testing had not been completed. Unit 1 remained at 95% power.

Unit 2 operated continuously during this period without any significant problems. At the end of the inspection period, the unit had been on-line 211 days.

The mechanical vacuum pumps remained tagged out on both units due to concern about control room dose in the event of a Rod Drop Accident. The licensee, in a letter to the NRC dated February 13, 1997, committed to upgrade the mechanical vacuum pump trip function to implement a vacuum pump trip from the main steam line radiation monitor prior to the next startup.

Seven of eight Justification for Continued Operation (JCO) in the Environment Qualification (EQ) of equipment area remain open for both units. The following provides the status of the EQ JCOs and associated Engineering Service Requests (ESRs):

- 1) ESR 96-00425, Evaluation of EQ sealants was considered closed by the licensee.
- 2) ESR 96-00503, Associated Circuit EQ was scheduled for completion May 31, 1997.
- 3) ESR 96-00426, Evaluation Quality class and EQ classification of Post Accident Sample System valves was scheduled for completion June 6, 1997.
- 4) ESR 96-00501, Motor Control Center (MCC) EQ was scheduled for completion June 6, 1997.
- 5) ESR 96-00625, EQ Type JCO for EQ Fuses Without a Qualification Data Package (QDP) was scheduled for completion June 6, 1997.

- 6) ESR 96-00627, QDP for Marthon 300 Terminal Blocks was scheduled for completion December 31, 1997.
- 7) ESR 97-00087, EQ-Type JCO for Improperly Configured Conduit Seal was scheduled to be completed June 30, 1997.
- 8) ESR 97-00229, JCO for GE CR 151 B Terminal Blocks was scheduled to be completed July 15, 1997.

In addition, a JCO and an Operations Standing Instruction SI 97-016, remains in effect providing guidance and allowed out of service time for the three control building air-conditioning units. During a Safety System Functional Inspection conducted in May-June 1996, it was identified that the units were incorrectly downgraded from safety related or Q-list to non-safety related, ESR 96-00366, Evaluation of Using Existing Control Room Air Conditioners, provided a JCO evaluation until the issue was resolved. The issue remains open and the licensee committed in their February 15, 1997, letter to resolve all open issues by the completion of the Unit 1 refueling outage 12, scheduled to begin in the second quarter of 1998.

In summary, both units operated continuously during this report period. However, there are seven outstanding JCOs in the EQ area and one JCO for the non-Q control building air-conditioning units. Mechanical vacuum pumps due to concerns related to Rod Drop Accident analysis remain tagged out.

I. Operations

02 Operational Status of Facilities and Equipment

02.1 Shift Turnover Meetings

a. Inspection Scope (71707)

The inspector reviewed the operation crew shift turnover meeting and discussion held on March 4, 1997.

b. Observations and Findings

On March 4, 1997, the inspector observed at 7:10 a.m. the crew (that had just assumed the shift responsibilities) conduct a turnover meeting in the control room. The shift turnover meetings are conducted different from what the inspector had encountered at other facilities. Although called a shift turnover meeting, the meeting was a post turnover meeting. Each operator conducted a one-on-one turnover and assumed the shift. The off-going crew left the control room and left the site. Each unit SRO gave a status of the unit, etc. The crew (assigned to the day shift) had been off several days prior to the meeting and was off work when the recirculation pump transients occurred on March 1, 1997. The crew stated that the problems had occurred but that someone later in the shift would give them the details.

The inspector noted that the crew did not have a good perspective of plant problems which had occurred since being off work. These problems were not discussed with the crew prior to them assuming the watch. The inspector discussed this concern with plant management. Also, the inspector discussed that at the other licensees' facilities shift turnover was conducted in a more conventional way with a turnover meeting prior to assuming the shift responsibilities.

In response to this issue, the licensee implemented a pre-shift turnover meeting for the on-coming crews that had been off work for several shifts. As the crews are on 12 hour shifts, the licensee concluded that the last 12 hours off shift could quickly be reviewed for plant changes and a pre-shift turnover was not necessary.

The inspector attended the pre-shift turnover meeting on April 8, 1997. The meeting was conducted by the off-going shift supervisor. Changes for the several days the shift was off work were reviewed.

c. Conclusions

The inspector concluded that the present method of conducting a post turnover was not effective to make operators fully aware of plant changes and problems prior to assuming the shift responsibilities. The licensee was responsive to this concern and initiated changes to the shift turnover process for on-coming crews that had been off site for several days.

08 Miscellaneous Operations Issues (92901)

08.1 (Closed) LER 50-324/96-04: Jet Pump Surveillance Not Performed Prior to Exceeding 25% Reactor Power.

This licensee event report (LER) reported the events surrounding the discovery that the jet pump surveillance was not performed prior to exceeding 25% reactor power. During power ascension from 15% to 30%, the licensee failed to perform Periodic Test OPT-13.1 Reactor Recirculation Jet Pump Operability. Satisfactory performance of OPT-13.1 would have satisfied the surveillance requirements stated in TS 4.4.1.2.1. The licensee, upon recognizing the failure, reduced power below 25% and entered the Limiting Condition for Operation (LCO) for TS 3.4.1.2. The jet pump surveillance was satisfactorily performed and the LCO exited.

The inspector reviewed the LER, associated condition report, and corrective action program action items. TS 4.0.4 requires that entry into an operational condition or other specified applicable state shall not be made unless the surveillance requirements associated with the LCO have been performed within the applicable surveillance interval or as otherwise specified. The inspector concluded that the failure to perform surveillance testing to satisfy jet pump operability requirements prior to exceeding 25% rated thermal power was a violation of TS 4.0.4. This licensee-identified and corrected violation is being

treated as a Non-Cited Violation, consistent with section VII.B.1 of the NRC Enforcement Policy and is identified as NCV 50-324/97-05-01, Missed Jet Pump Surveillances. Based on satisfactory completion of the licensee corrective actions and issuance of the above NCV, this item is closed.

08.2 (Open) LER 50-324/96-03-01: Operation in Excess of Maximum Power Level Specified in Operating License.

In this LER the licensee committed to test and calibrate the reactor feedwater flow venturis by March 31, 1997. The licensee stated additional time was needed to complete this action and revised the commitment date to May 30, 1997.

On April 2, 1997, the licensee initiated CR 97-1293 titled Nonconservative Feedwater Flow Indication. Ultrasonic flow testing on the feedwater water flow venturis revealed that the plant indicated feedwater flow for Unit 1 was nonconservative by about 1.6 percent. Feedwater flow inputs into the reactor power level calculation. If the new data was accurate, actual reactor power was 2479 MW thermal when indicated power was 2436 MW thermal. Data for Unit 2 indicated the valves were conservative. This data was in conflict with feedwater flow tracer testing performed in 1994. Present steam plant data supported that the latest data was correct. However, questions remained as to why the difference.

The licensee took action to reduce reactor power by 43 MW thermal (93% power), and controlled the APRM gain adjustment factors and thermal limits equal to 0.98.

On April 7, 1997, the licensee recalibrated the Unit 1 feedwater flow transmitters with new scaling factors which the licensee considers conservation. Unit 1 power was increased from 93% to 95% power. Power increase to 100% was contingent upon completion of the power ascension tests associated with the recently NRC approved increase in maximum thermal power.

This LER will remain open pending completion of the commitment and further NRC review.

08.3 (Open) URI 50-325(324)/97-02-02: Recirculation Pump Transients.

The inspector reviewed the licensee's root cause report for CR 97-00926 and CR 97-00923 concerning work in the switchyard on power circuit breaker, PCB 31A. Following maintenance the breaker was closed but a grounding strap had been left installed. This caused the breaker to immediately open and a trip of the 2B recirculation motor generator set. The licensee formed an event review team to assess the problem. The licensee determined that the cause was due to poor worker practice, improper verification techniques, and insufficient administrative controls for maintaining status and accountability of materials. Corrective action included personnel disciplinary action, training on

lessons learned, development of a ground tagging program, and general review of transmission department work activities.

The inspector reviewed the licensee's event assessment team report and concluded it was thorough. The inspector inspected the switchyard around the PCB 31A breaker on March 5, 1997. There was no evidence of any physical damage in the switchyard. This event was caused by additional work outside the original job scope to remove a rag stuck in the switch mechanism. The rag could not be easily removed. Two ground straps were installed to allow removal of the rag. Only one ground strap was removed and the procedure controls used initially were not followed. The procedures used were Transmission Services procedures and not governed by the plant operating requirements. Although this event occurred on the owner controlled property the same problem could have occurred off-site.

Additionally, the inspector held discussions with the licensee regarding the runbacks. Additional questions remain and this will remain open pending resolution of the questions.

II. Maintenance

M1 Conduct of Maintenance

M1.1 RHR Time Delay Relay Calibration

a. Inspection Scope (61726)

The inspector observed the performance of Maintenance Surveillance Test Procedure 1MST-RHR28R, Time Delay Relays Channel Calibration.

b. Observations and Findings

On March 5, 1997, the inspector observed the performance of 1MST-RHR28R for loop "A". This surveillance test performs calibrations of the time delay relays associated with the 1-E11-F007A, Residual Heat Removal (RHR) Minimum Flow Valve, 1-E11-F017A, LPCI Outboard Injection Valve, and 1-E11-F0048A, RHR Heat Exchanger 1A Bypass Valve. Successful completion of the test partially satisfied the TS 4.3.3.2 requirement to calibrate the time delay relays for the RHR system.

The inspector verified that the required administrative approvals and equipment tagouts were performed prior to beginning the testing. All test instrumentation was verified to be within the current calibration cycle. The test procedure was referred to at each step and the inspector observed good procedural use, self-checking, and independent verification. The inspector reviewed the test data and verified that the values recorded were accurate and complete.

M1.2 Diesel Generator Monthly

a. Inspection Scope (61726)

The inspector observed the performance of the monthly load test for diesel generator (DG) 2.

b. Observations and Findings

On March 31, 1997, the inspector observed the performance of Periodic Test OPT-12.2B, No. 2 Diesel Generator Monthly Load Test. OPT-12-2B was performed to satisfy TS requirements 3.8.1.1.b and 4.8.1.1.2.a. The test verified full level in the engine-mounted and four day fuel tanks, the diesel started and accelerated to rated speed in 10 seconds, the generator could be successfully loaded and run for at least 15 minutes, and the DG was properly aligned to provide power to the associated emergency bus.

During the performance and review of the test the inspector observed that testing was accomplished by qualified personnel, procedural precautions and limitations were followed, and acceptance criteria met. Inspector review determined that the procedure conformed to the TS requirements. The inspector independently verified selected parameters during the surveillance performance and that the test was completed at the required frequency. The inspector observed adequate supervisory oversight and procedure use.

M1.3 RCIC Maintenance Activities

a. Inspection Scope (62707)

The inspector observed several maintenance activities during the Unit 1 Reactor Core Isolation Cooling (RCIC) System Outage.

b. Observations and Findings

On March 19, 1997, the inspector observed the installation of environmentally qualified (EQ) seals and mechanical valve lube inspection on the RCIC system on Unit 1. The EQ seal installation was performed to address EQ concerns with the position of the seal for selected safety related instrumentation. During seal replacement on the 1E51-PSH-N012A, RCIC Turbine Exhaust Diaphragm High Pressure Switch, the inspector observed adequate communication and coordination between the workers, procedures had been properly approved and in use. The inspector noted a good practice in the inclusion of relevant administrative procedures in the work packages. Inspector observations of mechanical valve lubrication inspections identified no concerns or deficiencies.

The inspector verified that all applicable limiting conditions for operation were appropriately entered and exited and that operability testing after the EQ seal installation was completed satisfactorily.

In addition the inspector noted good coverage of the activities by line supervision and the health physics technician.

M1.4 Maintenance Conclusions

Good coverage of maintenance activities by maintenance line supervision and the health physics technician was observed during RCIC system maintenance activities. Adequate supervisory oversight and procedural use was observed during monthly diesel testing.

M2 **Maintenance and Material Condition of Facilities and Equipment**

M2.1 Maintenance Practices

a. Inspection Scope (62707)

The inspector performed observations of maintenance practices during routine tours on April 8-9, 1997.

b. Observations and Findings

During a routine tour of the Unit 1 reactor building on April 8, the inspector discovered a large cart of scaffolding material on the 20 foot elevation without a wheel clamp. The lack of a clamp could have allowed the cart to roll and potentially impact nearby High Pressure Coolant Injection, Standby Gas Treatment, or RHR piping. The inspector notified licensee personnel and a clamp was promptly applied.

During a routine plant tour of the Unit 1 reactor building on April 9, the inspector discovered a clear plastic bag containing yellow decontamination towels. This clear plastic bag was located less than 5 feet from the spent fuel pool. The clear translucent material would not have been readily visible should it have fallen in the spent fuel pool. The inspector promptly notified the control room and the bag was removed from the floor.

Despite the discovery of one wheeled cart the inspector observed that overall licensee performance with regards to the securing of wheeled carts has improved. The licensee had recently improved the marking and signs on the refuel floor to raise the level of awareness with regards to foreign material exclusion. The clear plastic bag left near the spent fuel pool demonstrates that further attention is needed in this area.

c. Conclusions

Maintenance activities with regards to securing wheeled equipment has improved. Further attention is needed in the area of foreign material exclusion around the spent fuel pool.

M3 Maintenance Procedures and Documentation

M3.1 Core Spray Sparger Channel Calibration Procedure

a. Inspection Scope (61726)

The inspector reviewed the actions associated with an abnormal differential pressure reading on the Unit 1 Core Spray Sparger Break Detector.

b. Observations and Findings

On March 9, 1997, an auxiliary operator was verifying instrumentation indications and observed that the reading displayed for 1-E21-PDS-N004A, Core Spray Line Break Indicator, was not within specifications. This pressure switch functions to detect a break in the core spray (CS) piping located between the vessel and the shroud. The differential pressure (dP) sensor measures the pressure across the core.

The inspector reviewed the associated instrumentation, Engineering Service Requests (ESR) 95-238 and 97-181, CR 97-1053, and LER 50-325/97-02, Core Spray Header Differential Pressure Instrumentation Inoperable. In LER 97-02, the licensee stated that the safety significance was minimal since an actual break in the core spray line would have actuated the alarm. Immediate corrective actions included recalibration of the 1-E21-PDS-N004A which confirmed that the pressure sensor was within tolerances. Additional action included backfilling both sensing lines with no change in the readings. After completion of the review of the existing documentation and discussions with the licensee the cause for the abnormal indication has not been definitively determined. The licensee surmises that the dP may have been affected by voiding of the sparger nozzles. The CS dP nozzles may be empty or full depending on local hydraulic/thermodynamic conditions.

Pending completion of the NRC's review of the licensee's corrective actions and further investigation of the problem, this item will be tracked as Inspector Follow-up Item IFI 50-325/97-05-02, Abnormal CS Sparger Break Detector Indication.

TS surveillance operability requirement 4.5.3.1.c.2 required the performance of a channel calibration for dP instrumentation every three months and verification that the setpoint is 5 ± 1.5 psid greater than normal dP. The setpoint was set at $+31 \pm 7$ inches of water back in 1985 was based on a normal value of -108 inches of water. Upon determining that the actual normal value was -154 inches of water, the licensee concluded that the dP instrument had not been in compliance with TS surveillance requirements. The -154 inches of water value was determined as recorded in the system engineer's walkdown notes, ESR 97-205, and LER 50-325/97-02, Core Spray Header Differential Pressure Instrumentation Inoperable, to have been the normal condition since the start of the current Unit 1 operating cycle.

The inspector reviewed the last three performances of Maintenance Surveillance Procedure 1MST-CS21Q, CS Sparger High dP Chan Cal. This test was performed to assure CS sparger break detection instrumentation was operable in accordance with TS 4.5.3.1.c.2. In the December 4, 1996 and February 26, 1997 tests, the inspector determined that the indicated dP routinely exceeded normal expectations, therefore the alarm setpoint was not verified to be within 5 ± 1.5 psid of normal which was identified as -154 inches of water. The inspector determined that if the procedure had required actual verification of the alarm setpoint in relation to the indicated instrument pressure this nonconformance would have been identified earlier.

TS 6.8.1.c requires that written procedures shall be established, implemented, and maintained covering TS surveillance test activities of safety related equipment. The failure to have a procedure that correctly implemented the TS 4.5.3.1.c.2 requirement that the CS Sparger Break Detection alarm setpoint be within 5 ± 1.5 psid greater than the normal indicated pressure of -154 inches of water was identified as a violation. This violation is identified as VIO 50-325/97-05-03, Inadequate CS Surveillance Verification.

c. Conclusion

An Inspector Follow-up Item was identified pending completion of NRC's Review of licensee corrective actions and further investigation of the problem. A violation was identified for the failure to verify the CS sparger break detector alarm setpoint as required by TS.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) LER 50-325/96-04: Standby Gas Treatment System Charcoal Testing.

This voluntary LER was issued on April 19, 1996, to document the finding that charcoal filters for the standby gas treatment system were not tested in accordance with Regulatory Guide 1.52, Revision 1, as specified in TS 4.6.6.1.b.2. This issue was identified on March 21, 1996, during the dual unit shutdown to repair problems with the service water pumps. The Unit 1 startup was placed on hold by licensee management pending resolution of this issue.

The issue was identified following information received by the NRC from another utility who had identified this problem. Subsequent investigation determined that vendor testing performed on the charcoal for the Unit 1 standby gas treatment system was not in accordance with Regulatory Guide 1.52, Revision 1. The testing was conducted with pre-loading, loading, and post loading temperatures of 80 degrees centigrade (C) versus the required 25 degrees C pre and post load temperatures. The vendor had provided the licensee certification that the testing was performed in accordance with the requirements based on their determination that the testing was equivalent. The performance of believed equivalent testing by the vendor resulted in non-compliance

with the requirements of TS 4.6.6.1.b.2, which was a violation. This violation was identified as NCV 50-325/97-05-04, Charcoal Testing Not Performed in Accordance with TS Requirements. This non-compliance constitutes a violation of minor significance, and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy.

On identification, the licensee had new samples of the Unit 1 charcoal tested in accordance with the requirements of Regulatory Guide 1.52, Revision 1. Successful testing was completed on March 23, 1996, prior to the restart of Unit 1. Charcoal from Unit 2, which was still within its 18 month surveillance window from installation, was sampled and successfully tested. In addition to these immediate corrective actions, the licensee revised testing procedures for both the Unit 1 and Unit 2 standby gas treatment trains and control building emergency air filtration system charcoal filters, to specifically incorporate the temperatures required in Regulatory Guide 1.52, Revision 1. These same changes were incorporated into the testing requests accompanying the charcoal samples sent to the testing vendor. The inspector has reviewed this event and the completed corrective actions, and finds that with the issuance of the above noted NCV, this issue is closed.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Rod Withdrawal Error Analysis

a. Inspection Scope (37551)

The inspector reviewed the issues concerning notification by the fuel vendor that an inconsistency existed between the rod withdrawal error (RWE) analysis assumptions and the TS operability requirements.

b. Observations and Findings

The licensee was notified in a letter dated February 24, 1997, by the Boiling Water Reactor (BWR) vendor of a situation at another facility that could have similar implications at Brunswick. The letter indicated that the vendor had failed to notify another reactor licensee of the need to issue a TS change request to control those conditions for which the continuous withdrawal of a high worth control rod may cause fuel damage by exceeding the 1% plastic strain criteria. In a letter dated March 10, 1997, the licensee was notified by the BWR vendor of the results of a review of the Supplemental Reload Licensing Report (SRLR) specific to Brunswick. This review indicated that a similar condition existed at Brunswick for Cycle 10 on Unit 1. No discrepancies were identified for Unit 2 or the current Unit 1 operating cycle.

The Rod Block Monitor (RBM) suspends movement of a control rod in the event of the improper withdrawal of that rod from an area of high density during high power. The improper withdrawal of a high worth rod

at high power would lead to fuel damage if the cladding plastic strain exceeds 1% or if the safety limit minimum critical power ratio (MCPR) was surpassed. The existing RBM TS provided protection of the fuel from exceeding the safety limit MCPR in the operational condition by requiring both RBM channels operable when greater than or equal to 90% rated thermal power. No requirement existed in the Brunswick TS's to maintain RBM operability to prevent exceeding the 1% plastic strain criteria, despite the BWR vendor analysis taking credit for that condition.

The inspector reviewed the associated correspondence, CR 97-1277, RWE analysis and TS. The licensee determined that on May 24, 1995, movement of control rods while the RBM was inoperable was in accordance with TS. During this occurrence the licensee contends that, despite movement of the rods with the RBM inoperable, conservatism built into the calculation showed that the 1% plastic strain criteria was not exceeded.

The letter indicating the potential Brunswick discrepancy was received by the licensee Nuclear Fuels Section and forwarded to site engineering organization for concurrent review the day after receipt on March 10, 1997. Annotated on the letter was an indication dated March 11, 1997 that the Nuclear Fuels Section would initiate a CR. The inspector could not locate a CR recording the nonconformance. The nonconformance was finally entered into the corrective action program after discussions between the inspector and the licensee on March 31, 1997, at 1:00 p.m. concerning performance of an evaluation for reportability. Subsequently the CR was evaluated and a reportability determination made. At 6:54 p.m. on March 31, the licensee made a four-hour report to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(D).

Plant Program Procedure OPLP-04, Corrective Action Management implements the Corrective Action Management Policy for Brunswick. The procedure required consultation with the supervisor and initiation of a CR upon identification of an operability concern or potential reportable event. The CR would serve to document the condition and actions taken, and the possibility of an operability concern or reportable event. Potential operability concerns or reportable events would then be evaluated by the Shift Superintendent. Additionally, the CR served to provide proper classification and correction of adverse conditions, deficiencies, or deviations by management processes based upon importance.

The inspector determined that a CR was not written promptly upon identification of a potential operability concern or reportable event. 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, requires that measures shall be established to assure that conditions adverse to quality such as deficiencies, deviations, and nonconformances are promptly identified and corrected. The failure to promptly initiate a CR upon identification of a potential operability concern or reportable event was identified as a violation. This violation will be identified as VIO 50-325(324)/97-05-05, Timeliness of Operability and Reportability Determination.

c. Conclusions

The inspector reviewed the actions associated with the BWR vendor's notification of an error in the SRLR for Unit 1. Licensee review indicates that although rods were moved during RBM inoperability no safety limits were exceeded. The failure to promptly identify a nonconformance delayed evaluation of a potential operability concern or reportable event was identified as a violation.

E3 Engineering Procedures and Documentation

E3.1 Improper Removal of Instrument Response Time Testing Requirements

a. Inspection Scope (37551)

The inspector reviewed the actions surrounding the deletion of instrumentation response time testing requirements from the Updated Final Safety Analysis Report (UFSAR) and subsequent notice of enforcement discretion.

b. Observations

In December 1993, the NRC issued Generic Letter (GL) 93-08, Relocation of Technical Specification Tables of Instrument Response Time Limits. The GL provided guidance for the relocation of instrument response time limits from the TSs to the UFSAR. The licensee submitted a TS change request in a letter dated April 14, 1994 which was supplemented on May 16, 1994. The letters requested relocation of the instrument response times to the UFSAR in accordance with GL 93-08. The request was reviewed and subsequently approved by the NRC by Amendments 171 and 202 to the operating license for Units 1 and 2 with the NRC Safety Evaluation Report included in a letter dated May 31, 1994.

The NRC, in a letter dated December 28, 1994 to the Boiling Water Reactors Owners Group (BWROG) Chairman, concluded that selected instrumentation response time testing (RTT) as identified in BWROG Licensing Topical Report NEDO-32291-A, System Analysis for Elimination of Selected Response Time Testing Requirements could be deleted. The NRC would accept the topical report as a reference in license amendments for those licensees adopting the NEDO recommendation to eliminate selected instrumentation RTT, based on the conclusion that significant degradation could be detected during the performance of other surveillance tests, principally calibration tests. On February 14, 1995, the licensee, citing the NRC's approval of the NEDO recommendations deleted the RTT requirements for certain instruments under the control of a 10 CFR 50.59 safety evaluation.

c. Findings

On March 21, 1997, the licensee was notified of a potential noncompliance with the TSs. On March 20, 1997, Washington Nuclear Power Station Unit 2 (WNP-2) entered into a TS 3.0.3 required shutdown due to

not performing RTT of selected Reactor Protection System (RPS), Emergency Core Cooling System (ECCS), and Containment Isolation Instrumentation. The noncompliance at WNP-2 resulted from the improper deletion of those RTT requirements, which were previously located in TSs from the UFSAR without NRC approval. Subsequent NRC review determined that Brunswick had deleted the RTT requirements located in the UFSAR in the same manner as WNP-2. The licensee inappropriately made these changes based on NRC approval of the NEDO document, but did not make corresponding changes to the plant TS to indicate actual testing methods.

The licensee reviewed the last performances of the RTT for those instruments deleted from the UFSAR. The licensee determined that RTT for selected instruments in the RPS, ECCS, and those used for containment isolation had not been performed within the TS allotted time. The licensee stated in their request for discretion that the affected instrumentation was verified functional during the period of nonconformance by the performance of channel functional, calibration and logic system functional tests. At 8:30 pm on March 21, 1997 in a telephone conversation with the NRC, the licensee requested the NRC exercise discretion in the enforcement of compliance with the 6 hour requirement to shutdown both units in TS Limiting Condition for Operation (LCO) for Sections 3.3.1, Reactor Protection System Instrumentation, 3.3.2, Isolation Actuation Instrumentation, and 3.3.3, Emergency Core Cooling System Actuation Instrumentation. In a letter to the licensee dated March 25, 1997, the NRC staff acknowledged that the equipment operability was assured by qualitative RTT performed on the deleted instruments in accordance with the NRC-approved NEDO topical report. Based on evaluation of the request the NRC staff was satisfied that granting the request involved minimal or no safety impact on public health and safety. Therefore, the NRC staff exercised discretion not to enforce compliance with the applicable TS sections. The Notice of Enforcement Discretion was granted by the NRC staff by telephone at 9:36 p.m. and documented by the March 25, 1997 letter.

The inspector reviewed the TS, associated Engineering Service Requests, TSs, unit log entries, and correspondence. The inspector verified that the licensee approved the deletion of selected instrumentation RTT under a 10 CFR 50.59 safety evaluation. UFSAR Change Request 94FSAR-100, Deletion of RTT Requirements Per NEDO-32291, documents this deletion. The change analysis cites NRC approval of the NEDO topical report in the 10 CFR 50.59 evaluation. This issue is unresolved pending further NRC review. This issue is identified as URI 50-325(324)/97-05-06, Deletion of RTT Requirements.

d. Conclusions

The licensee as a result of a BWROG topical report deleted TS RPS, ECCS, and Isolation Actuation response time testing. Subsequently, a notice of enforcement discretion was issued due to the failure to perform several response time test as required by TS. This issue is unresolved pending further NRC review.

E3.2 Special UFSAR Review

A recent discovery of a licensee operating the facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the UFSAR descriptions. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures, and/or parameters.

The inspectors reviewed the UFSAR change associated with instrument response time testing requirements in paragraph E3.1. No additional issues were identified.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Water Chemistry Controls

a. Inspection Scope (84750)

The inspectors evaluated implementation of the licensee's water chemistry program for control of primary system water quality. The inspectors reviewed the specific plant chemistry and operational controls affecting plant water chemistry. TS 3.4.4 specifies that the concentration of chloride and the conductivity level in the Reactor Coolant System (RCS) be maintained below 0.50 ppm and 2.0 μ mhos/cm, respectively. TS 3.4.5 specifies that the specific activity of reactor coolant be limited to less than or equal to 0.2 Ci/g dose equivalent iodine (DEI).

b. Observations and Findings

The inspectors reviewed the licensee's Procedure OAI-81, Water Chemistry Guidelines, Revision No. 18, dated January 14, 1997, and determined that it included provisions for sampling and analyzing reactor coolant at the prescribed frequency for the parameters required to be monitored by TSs. Action levels and responses for out of limit chemistry parameters were also reviewed as described in OAI-81. This procedure included provisions for monitoring water quality based on established industry guidelines and standards. The inspectors noted that the referenced licensee procedure specified the sampling frequency and typical values for each parameter to be monitored. Action levels applicable to various operational modes were given where appropriate. Guidance was also provided for actions to be taken if analytical results exceeded prescribed limits. The inspectors determined that the above guidance and procedures were consistent with applicable TS requirements.

The inspectors reviewed chemistry statistical analysis reports, primary chemistry data, related data trend plots, and records of analytical results for selected Unit 1 and Unit 2 parameters at power operations and at shutdown during the period January 1, 1995 through March 4, 1997. The parameters selected included conductivity, chlorides, sulfates, boron, zinc, and dose equivalent Iodine-131. A review of chemistry data disclosed that the licensee exceeded water chemistry TS limits for conductivity on April 20 and 21, 1995 but the Unit 1 reactor vessel was defueled, the unit was in an outage, and the licensee was conducting a full system chemical decon. The licensee was able to provide documentation that verified an exemption had been granted to exceed TS limits by the NRC's Office of Nuclear Reactor Regulation based on the licensee's amendment submittal approved by the NRC for these specific conditions only. The licensee also entered administrative action levels in accordance with OAI-81 on numerous occasions during the period of review indicating a parametric variance from normal values during power operations. In each case the inspector reviewed, the licensee was able to explain the variance in terms of an anomaly such as a reactor water cleanup (RWCU) system trip, expended RWCU filters, or an evolution such as a reduction in the hydrogen water chemistry (HWC) injection rate.

c. Conclusions

Chemistry parameters were maintained well within TS and licensee administrative limits. The licensee's water chemistry control program for monitoring water quality at specified surveillance frequencies had been implemented in accordance with the licensee's TS requirements.

R1.2 Semiannual Radioactive Effluent Release Report

a. Inspection Scope (84750)

TS 6.9.1.8 requires the licensee to submit a Semiannual Radioactive Effluent Release Report covering liquid and gaseous effluent releases resulting from facility operations during each six months period of prior operation. The report provided required estimates of radiation doses to members of the public from effluents released to unrestricted areas. Data on solid radwaste shipments was also provided in the report and evaluated. The licensee's program to monitor and control radiation doses associated with effluent releases within TS 3.11 limits was evaluated. The inspectors also evaluated effluent data to identify adverse effluent trends, increases in estimated doses to the public from effluents, if any, and explain these variances in the context of operational experience.

b. Observations and Findings

Liquid and gaseous effluent data was developed from the licensee's effluent release reports for the years 1994, 1995, and 1996. The inspectors evaluated supporting raw data for effluent release reports covering these years with emphasis on identifying elevated release trends or data anomalies. As shown in the effluent release summary

below, the amount of activity released during 1994, 1995, and 1996 in liquid effluent streams remained relatively stable, at low levels, and well within regulatory release limits. The amounts of activity released during 1996 as fission gases, iodides, and particulates in gaseous effluents was also at low levels and within release limits. Minor variances in gaseous effluent parameters within operational limits were identified between 1995 and 1996 indicative of normal steady state power operations. No abnormal releases were identified during the period.

Brunswick Radioactive Effluent Release Summary

	1994	1995	1996
Abnormal Releases			
Liquid	0	0	0
Gaseous	0	0	0
Activity Released (curies)			
a. Liquid			
1. Fission and Activation Products	0.045	0.415	0.04
2. Tritium	69.6	55.2	47.2
b. Gaseous			
1. Noble Gases	477	4330	713
2. Iodine 131	2.13E-03	5.32E-03	2.12E-02
3. Particulates	2.12E-02	2.24E-02	6.36E-03
4. Tritium	2.26E-01	3.66E-01	2.70E-01

As indicated above the curies of mixed fission and activation products were significantly elevated for 1995 in liquid releases due primarily to the high activity from spent fuel shipping casks. The licensee addressed this problem through improved control over cask washdown water and the installation of a filter on the refuel floor to remove activity prior to introduction into the radwaste system. During 1996, the licensee achieved low levels of liquid effluents due to a liquid effluent reduction initiative that included the recovery of the floor drain collector filter system and cleanout of radwaste tanks and piping. Accumulated sludge and debris from radwaste processing systems was successfully removed. As a result of this radwaste processing system upgrade project, a majority of floor and equipment drain quality water was reclaimed resulting in a great reduction in liquid effluent volume and curies. Less than three million gallons of radioactive liquid effluents were released from radwaste (only 800,000 gallons released from April through December 1996) as a result of this project which represents a record low release volume for the site (The site released 4.4 million gallons in 1995.)

During 1995, noble gases released were elevated due to the presence of a fuel leak in Unit 2 and problems associated with bypass leakage of a Unit 2 offgas bypass valve. Successful licensee efforts to mitigate the bypass valve problem pending outage work precluded a significantly greater gaseous release volume.

The inspectors evaluated 1994, 1995, and 1996 hypothetical maximum annual dose estimates to the public from radioactive materials in gaseous and liquid effluent streams. Dose limits for the total body from liquid effluents are given in TS 3.11.1.2, and limits for doses from gaseous effluents are provided in TS 3.11.2.2 and TS 3.11.2.3. Doses are calculated in accordance with the methodology in the Offsite Dose Calculation Manual (ODCM) and are a function of the release point, the isotopic mix, total curies released, and exposure pathways. All calculated doses from liquid and gaseous releases were determined to be less than 1 percent of the applicable TS dose limits and were calculated to be in a range of 0.03 percent to 0.4 percent of applicable TS limits.

The inspectors evaluated current tritium concentrations in the licensee's storm drain stabilization pond based on recent licensee condition reports which identified an increasing trend in tritium concentration in the pond. One sample well, ESS-2C, averaged monthly tritium concentrations during a recent twelve month period of approximately 84,000 picocuries/liter. The average tritium concentration in the pond water from 1991 to the present was $8E-5$ microcuries/cc which was below the 10 CFR Part 20 limit of $1E-3$ microcurie/cc. However, in that the pond is unlined and elevated, there is a hypothetical potential pathway for tritium migration. Monitored releases within regulatory limits are currently made from the pond routinely via a ditch to the intake canal. To address the issue of recent elevated tritium concentrations in the pond, the licensee plans an upgrade which would route turbine building condensate containing tritium to the plant's normal radwaste system for processing instead of the storm drain system which discharges to the stabilization pond. Additional licensee actions contemplated include increased water sampling and additional monitoring wells in potential migration pathways. The inspectors evaluation of current licensee studies and monitoring results identified no regulatory concerns. The inspectors informed the licensee that the planned licensee activities which address this issue will be further reviewed upon completion and the issue will be tracked as an Inspector Followup Item (IFI), IFI 50-325(324)/97-05-07, Actions to Reduce Tritium in the Stabilization Pond.

The licensee had undertaken initiatives to reduce solid radwaste volume during 1996 and 1997. Efforts ongoing in radwaste generation minimization include increased education and communication programs and radwaste volume reduction/minimization initiatives. The licensee was storing onsite all radwaste generated, including post processing radwaste, due to the unavailability of offsite low level radwaste storage. During 1996, the licensee generated 60,655 cubic feet of radwaste, which was less than projected. During 1997, the licensee had

generated 4825 cubic feet through February. The 1997 goal was 49,300 cubic feet (a one outage year).

c. Conclusions

The inspectors concluded that the licensee had maintained an effective program to monitor and control liquid and gaseous radioactive effluents and thereby limit doses to members of the public to a small percentage of regulatory limits. The release of radioactive material to the environment from liquid and gaseous effluents for 1995 and 1996 was a small fraction of the 10 CFR 20, Appendix B and 10 CFR 50, Appendix I limits. The projected offsite dose commitments which resulted from plant liquid and gaseous effluents were well within limits specified in the TSs and the Offsite Dose Calculation Manual (ODCM). The results of planned licensee activities to reduce tritium in the stabilization pond will be reviewed in the future and tracked as an inspector followup item. Radwaste minimization efforts were successfully reducing radwaste volume with a significant reduction in the rate of radwaste generation evident from 1996 to 1997 year to date.

R1.3 External Occupational Exposure Control and Personal Dosimetry

a. Inspection Scope(83750)

The inspectors evaluated the adequacy of licensee radiological controls with emphasis on external occupational exposure controls during normal power operations. The inspectors made tours of the radiation controlled areas, observed compliance of licensee personnel with radiation protection procedures for routine work evolutions, and conducted interviews with licensee personnel with respect to knowledge of radiological controls and working conditions. The inspectors evaluated the adequacy of licensee commitments to upgrade site dosimetry and personnel monitoring programs to address NRC concerns identified in Brunswick Unresolved Items 50-325(324)/96-16-03 for Lack of Accurate Dose Tracking and Dose Assignment Practices and Related Procedures.

b. Observations and Findings

The inspectors observed controls for external occupational exposures which met applicable regulatory requirements and were designed to maintain exposures As Low As Reasonably Achievable (ALARA). The inspectors reviewed select radiation work permits (RWPs) utilized to control ongoing work within the radiation controlled area (RCA) and noted that the rad controls observed were appropriate for the described tasks and radiological conditions. Interviews were conducted with radiation workers in order to determine the level of understanding of radiation work permit requirements from a representative cross-section of plant workers. The inspectors observed that the workers interviewed had signed onto an RWP, were wearing dosimetry appropriate to their work activities within the RCA in accordance with plant procedures, and were performing specific work activities on appropriate RWPs. The workers demonstrated an adequate knowledge of RWP requirements and of

radiological working conditions. The inspectors continued to note upgraded radiological posting practices throughout the plant. Pre-job RWP work planning and ALARA briefings for observed ongoing work evolutions were found to be conducted in an effective manner. During tours of the plant, the inspectors observed RC technicians performing radiation and contamination surveys in accordance with procedure.

During a routine facility inspection walkdown on the morning of March 26, 1997, the inspectors toured the Radioactive Material Storage Container Building (RMSCB) and identified a standard size five gallon bucket that had the appearance of a new, unopened container. The container was labelled "Activated Charcoal." With no radioactive material label evident. During questioning of licensee personnel in the area, it was determined the bucket had alarmed the small article monitor and measured approximately 1.3 million dpm. The inspectors requested that the contents be surveyed. Licensee personnel appropriately affixed a radioactive material label to the container as an immediate corrective action necessary to identify the hazard. It was later determined that the bucket contained highly contaminated components including a valve which surveyed at 474,000 dpm and a bag of nuts and bolts that surveyed at 681,000 dpm. In addition to a radiological safety concern with radioactive material found not controlled in accordance with labeling and storage procedures, the inspectors were additionally concerned that radiation workers had apparently not properly released the contaminated materials from a contaminated area prior to placement of the bucket in the RMSCB. Although not observed by the inspectors, the apparent improper transfer of highly contaminated material out of a contamination area (masked in what appeared to be a new container of activated charcoal) indicated a disregard for contamination control procedures. Upon discussion of these concerns with licensee management the licensee indicated full agreement and initiated prompt and thorough corrective actions. These actions included documentation of the findings as condition reports requiring root cause analysis, proper disposition of the improperly controlled container and its contents, initiation of an investigation to determine the circumstances/origins of the bucket, and a sitewide standdown with all site personnel regarding compliance with the basic radiation protection principles violated. The circumstances surrounding the movement of this highly contaminated valve from the work area to the RMSCB are identified as an Unresolved Item pending completion of the licensee's investigation. URI 50-325(324)/97-05-08. Movement of Unlabeled Container of Radioactive Material from Work Area to RMSCB.

During inspection activity conducted during the period December 2-6, 1996, the inspector's evaluation of the licensee's dosimetry, monitoring, and general radiation control procedures indicated the licensee did not treat dose to occupational workers in buildings outside the RCA as occupational dose and that licensee procedures and practices were generally deficient in this regard. Details of the issue are contained in Brunswick Inspection Report 96-16, dated January 2, 1997, in Paragraph R1.4, External Occupational Control and Personal Dosimetry. The licensee was unable to demonstrate adequately during the prior

inspection that occupational dose received by workers outside the RCA (restricted area) was being considered in the prospective analysis used to determine if workers required monitoring in accordance with the requirements of 10 CFR 20.1502. In response to these findings the licensee documented the issues in condition reports, identified root causes, and initiated significant corrective actions sufficient to remedy the inspector's concern. These actions included: 1) Expansion of the population of workers who will be issued a TLD to encompass all permanently assigned personnel at the site. This will involve the assignment of approximately 200 additional TLDs; 2) Revised plant practices and related procedures to permit all workers assigned a TLD to take them home and wear at all times while on site; and 3) Revise the practice of 100 percent "background radiation" subtraction as detected at a RCA access point to a practice of subtracting natural background as detected at a remote point not influenced by turbine building radiation shine. Although planned corrective actions adequately address the regulatory concerns identified during the prior inspection, URI 50-325(324)/96-16-03 will remain open pending licensee completion and implementation of needed dosimetry upgrades.

c. Conclusions

The radiological controls program was being effectively implemented with generally good occupational exposure controls observed during normal plant operating conditions. Good radiological control performance was apparent in specific work activities observed by the inspectors. The licensee was effectively controlling operational site exposures to low levels during the period of inspection although sitewide dose performance for 1996, at 702 person rem, remained relatively high. An Unresolved Item was identified concerning the movement of a contaminated valve to a radioactive material storage area.

R1.4 Transportation of Radioactive Materials

a. Inspection Scope (86750)

The inspectors evaluated the licensee's program for the preparation and shipment of packages of radioactive materials in accordance with regulatory requirements and the licensee's radioactive material receipt and shipping procedure, HPS-NGGC-0001, Rev. 4, dated February 17, 1997. 10 CFR Part 71 established the requirements for packaging, preparation for shipment, and transportation of licensed material. 10 CFR Part 71, Subpart H, established the quality assurance (QA) program requirements applicable to transportation of radioactive materials. 10 CFR Part 71.137 required the licensee to perform comprehensive, planned and periodic audits to verify compliance with the QA program and to determine the effectiveness of the program.

b. Observations and Findings

The inspectors evaluated the licensee's preparation of packages for transport including vendor services used for preparation and transport of radwaste. Also reviewed were detailed checklists completed by the licensee and vendors at the time of shipments to ensure proper packaging, labeling, and placarding of vehicles prior to shipping radioactive material offsite. The inspectors determined that licensee's procedure for shipping radioactive materials included provisions for performing the required surveys and for assuring that the radiation and contamination limits were met for each package offered for shipment. Licensee's records for several shipments of radioactive material were reviewed and it was found that the required surveys had been performed and that radiation and contamination limits had been met. The inspectors determined that the licensee's procedures included provisions for preparing shipping papers and manifests in accordance with requirements and for recording the required information thereon. The inspectors also reviewed shipping papers for selected shipments of radioactive materials and determined that they had been prepared in accordance with procedure. The inspectors determined that the licensee's procedures for shipping radioactive materials included provisions for providing drivers with the required instructions and that the shipping papers for selected shipments included a copy of those instructions. The inspectors determined that the licensee's procedures for shipping radioactive materials included provisions for making required advance notifications and that the licensee's records for selected shipments included copies of the forms used to make the required notifications. The inspectors reviewed selected shipping records and determined that needed information was being retained as required. The inspector's evaluated a 1995 E&RC program assessment to determine if the licensee had met the audit requirements of 10 CFR Part 71.137. The assessment was provided in response to the inspector's request to see an audit that met the specific requirements of Part 71.137. The inspectors determined that the assessment was broad in scope, covered multiple E&RC areas, but had very limited coverage of Part 71, Subpart H requirements, and did not meet the regulatory intent of Part 71.137. The licensee stated that despite the limited scope of the assessment reviewed they believed they were in compliance when other audits in other quality assurance areas were considered that could be tied to packaging and transportation of radioactive material requirements. The licensee stated they could demonstrate compliance and needed time to prepare a response. Review of licensee documentation for compliance with 10 CFR Part 71.137 was identified as an Unresolved Item URI 50-325(324)/97-05-09, Review Licensee Documentation for Compliance with Transportation of Rad Material Audit Requirements.

c. Conclusions

Based on the above reviews and observations, it was concluded that the licensee had implemented an effective program for packaging, preparation, and transport of radioactive material in accordance with regulatory requirements. One Unresolved Item was identified based on the

need of the licensee to demonstrate compliance with 10 CFR Part 71.137 audit requirements.

P8 Miscellaneous Emergency Planning (EP) Issues (92904)

P8.1 (Closed) LER 50-325/96-08: Hurricane Bertha at Brunswick.

This LER was issued on August 8, 1996, to report events which occurred onsite due the impact of Hurricane Bertha. The site entered an Unusual Event (UE) on July 10, 1996, following the issuance of a hurricane warning for the Brunswick County area by the National Weather Service. Preparations were made to ready the site for the storm. In accordance with site procedures, both units were taken to Cold Shutdown in preparation for the storm's arrival. Due to power losses caused by the storm, 29 of the 34 off-site emergency notification sirens became inoperable. A one hour notification was made in accordance with 10 CFR 50.72(b)(1)(v) when greater than seven sirens were determined to be inoperable. Additionally, a one hour event notification was made to report the suspension of the roving security watches pursuant to 10 CFR 50.54(x). While the roving watches were suspended, additional measures were established to maintain the requirements of the security plan. A subsequent review of the event identified that the suspension of the security watches and establishment of other measures constituted a loggable event in accordance with 10 CFR 73.71. However, this did not require invoking the provisions of 10 CFR 50.54(x). This issue, as well as the actions taken were discussed with and reviewed by the Region II security specialist inspector, and determined to be acceptable. The issuance of this voluntary LER documenting this issue is considered acceptable for closure of this item.

P8.2 (Closed) LER 50-325/96-11: Hurricane Fran at Brunswick.

This LER was issued on October 4, 1996, to report events which occurred onsite due the impact of Hurricane Fran. The site entered an Unusual Event on September 4, 1996, following the issuance of a hurricane warning for the Brunswick County area by the National Weather Service. Preparations were made to ready the site for the storm. In accordance with site procedures, both units were taken to Cold Shutdown in preparation for the storm's arrival. Due to power losses caused by the storm, 31 of the 34 off-site emergency notification sirens became inoperable. A one hour notification was made in accordance with 10 CFR 50.72(b)(1)(v) when greater than 7 sirens were determined to be inoperable. Additionally, a one hour event notification was made to report the suspension of the roving security watches pursuant to 10 CFR 50.54(x). When the roving watches were suspended, additional measures were taken to meet the requirements of the security plan. Despite these efforts, a security alert was declared on September 5, 1996, following the inability of two security cameras to monitor two protected area zones. For approximately 25 minutes, the requirements of security plan were unable to be met due to the immediate threat to personnel safety in posting compensatory guards to monitor the areas covered by the two cameras. Camera coverage was restored approximately 25 minutes later.

This uncompensated degradation of a safeguards system is a loggable security event and meets the reportability requirements specified in 10 CFR 73.71. This issue, as well as the actions taken were discussed with and reviewed by the Region II security specialist inspector, and determined to be acceptable. The issuance of this voluntary LER documenting this issue is considered acceptable for closure of this item.

S1 **Conduct of Security and Safeguards Activities**

S1.1 Annual Security Assessment

a. Inspection Scope (71750)

The inspector reviewed the annual assessment relating to protected area personnel access measures including equipment or pat-down searches for illegal contraband.

b. Observations and Findings

The inspectors reviewed the circumstances of CR 97-00794, dated February 20, 1997, resulting from a Nuclear Assessment Section (NAS) findings during the February 17-28, 1997, annual self assessment of the security program. The NAS team conducted performance drills during the evaluation and noted that the security officers responsible for conducting personnel and package searches prior to allowing access to the protected area (PA) failed to identify or properly handle devices introduced as contraband during two of the eight drills. As a result a potential existed for a weapon and explosive device to be introduced into the protected area. However, these events were part of a drill and none of the devices were introduced into the PA.

Paragraph 7.0, of the Physical Security Plan (PSP), Revision 0, dated March 15, 1996, requires "all personnel, materials, packages (including hand-carried packages), shall be searched for firearms, explosives and incendiary devices, prior to entry into the protected area." Paragraph 7.1 (3), of the PSP requires that a hands-on search of any individual be conducted when the search officer has a well founded suspicion that the individual may be carrying firearms, explosives, or incendiary devices.

Security procedure OSI-9, Personnel Access Authorization, Control and Identification, Revision 74, dated July 25, 1996, requires that "hand held metal detector units and/or a pat-down search shall be performed to the degree necessary to ensure detection of explosives, firearms, or incendiary devices on these individuals who are not successfully screened by the walk through detectors."

As noted above on two separate occasions during performance testing the search officers responsible for ensuring that contraband was not introduced into the protected area failed to perform duties according to regulatory requirements. Licensee management was responsive to this issue and initiated action to upgrade training in this area.

c. Conclusions

The security personnel responsible for searching personnel and packages entering the protected area failed to properly identify and control contraband. Additionally, work practices at the Primary and Secondary Access portals was not consistent with approved procedures and plans. This will be an inspector follow-up item 50-325(324)/97-05-10, Personnel Access Search Training.

V. Management MeetingsXI Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on April 21, 1997. Post inspection briefings were conducted on March 27, 1997. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Barnes, Manager Training
C. Barnhill, Dosimetry Supervisor, E&RC
A. Brittain, Manager Security
W. Campbell, Vice President, Brunswick Steam Electric Plant
R. Crate, Superintendent, Radiation Protection
B. Deacy, Outage Planning Manager
N. Gannon, Manager Maintenance
J. Gawron, Manager Nuclear Assessment
D. Holder, Supervisor, Radwaste Programs
K. Jury, Manager Regulatory Affairs
W. Levis, Director Site Operations
B. Lindgren, Manager Site Support Services
R. Lopriore, General Plant Manager
J. Lyash, Brunswick Engineering Support Section
B. Nurnburger, Superintendent, Environmental and Chemistry
C. Pardee, Manager Operations
G. Raker, Senior Analyst, Environmental and Chemistry
D. Pacini, Radiation Control Supervisor
P. Sawyer, Radiation Control Supervisor
R. Schlichter, Manager Environmental and Radiation Control
S. Tabor, Senior Specialist, Regulatory Affairs
J. Terry, Program Analyst, E&RC
M. Turkal, Supervisor Licensing and Regulatory Programs

Other licensee employees or contractors included office, operation, maintenance, chemistry, radiation, and corporate personnel.

E. Brown
C. Patterson
W. Rankin
D. Thompson
K. Barr

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
 IP 61726: Surveillance Observations
 IP 62707: Maintenance Observations
 IP 71707: Plant Operations
 IP 71750: Plant Support Activities
 IP 83750: Occupational Radiation Exposure
 IP 84740: Radwaste Treatment, Effluent & Environmental Mon.
 IP 86750: Transportation of Radioactive Material
 IP 92901: Followup - Operations
 IP 92902: Followup - Maintenance
 IP 92904: Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-324/97-05-01	NCV	Missed Jet Pump Surveillance (paragraph 08.1)
50-325/97-05-02	IFI	Abnormal CS Sparger Break Detector Indication (paragraph M3.1)
50-325/97-05-03	VIO	Inadequate CS Surveillance Verification (paragraph M3.1)
50-325/97-05-04	NCV	Charcoal Testing Not Performed in Accordance with TS Requirements (paragraph M8.1)
50-325(324)/97-05-05	VIO	Timeliness of Operability and Reportability Determination (paragraph E2.1)
50-325(324)/97-05-06	URI	Deletion of RTT Requirements (paragraph E3.1)
50-325(324)/97-05-07	IFI	Actions to Reduce Tritium in Stabilization Pond (paragraph R1.2)
50-325(324)/97-05-08	URI	Movement of Highly Contaminated Valve from Work Area to Storage (paragraph R1.3)
50-325(324)/97-05-09	URI	Review Licensee Documentation for Compliance with Transportation of Rad Material Audit Requirements per 10 CFR 71.137 (paragraph R1.4)
50-325(324)/97-05-10	IFI	Personnel Access Search Training (paragraph S1.1)

Closed

50-324/97-05-01	NCV	Missed Jet Pump Surveillance (paragraph 08.1)
50-324/96-04	LER	Jet Pump Surveillance Not Performed Prior to Exceeding 25% Reactor Power (paragraph 08.1)
50-325/96-04	LER	Standby Gas Treatment System Charcoal Testing (paragraph M8.1)
50-325/97-05-04	NCV	Charcoal Testing Not Performed in Accordance with TS Requirements (paragraph M8.1)
50-325/96-08	LER	Hurricane Bertha at Brunswick (paragraph P8.1)
50-325/96-11	LER	Hurricane Fran at Brunswick (paragraph P8.2)

Discussed

50-324/96-03-01	LER	Operation in Excess of Maximum Power Level Specified in Operating License (paragraph 08.2)
50-325(324)/97-02-02	URI	Recirculation Pump Transients (paragraph 08.3)
50-325(324)/96-16-03	URI	Unresolved Item for Lack of Accurate Dose Tracking and Dose Assignment Practices and Related Procedures (paragraph R1.3)
50-325/97-02	LER	Core Spray Header Differential Pressure Instrumentation Inoperable (paragraph M3.1)