



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos. 50-325/92-22 and 50-324/92-22

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket Nos. 50-325 and 50-324 License Nos. DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: August 1, 1992 - September 4, 1992

Lead Inspector: R. L. Prevatte 9/23/92
R. L. Prevatte, Senior Resident Inspector Date Signed

Other Inspectors: D. J. Nelson, Resident Inspector
P. M. Byron, Resident Inspector

Approved By: H. Christensen 9/25/92
H. Christensen, Chief Date Signed
Reactor Projects Section 1A
Division of Reactor Projects

SUMMARY

Scope:

This routine safety inspection by the resident inspectors involved the areas of maintenance observation, surveillance observation, contractor staffing, outage work activities, operational safety verification, engineering, verification of plant records, temporary modifications and onsite review committee.

Results:

In the areas inspected, no new programmatic weaknesses, significant safety matters, violations or deviations were identified. An inspector followup item involving the control of drawings and procedures was identified (paragraph 7).

The licensee made progress in reversing the previously identified increasing trend in drawing backlog (paragraph 7).

Maintenance backlog reduction efforts continued, with emphasis placed on completion of as many items as possible rather than by priority ranking. Accordingly, the licensee plans to develop an integrated work schedule (paragraph 5).

The licensee has implemented their pre/post-startup work request screening process, but due to a lack of management guidance and direction it has experienced implementation problems (paragraph 5).

Licensee actions taken in response to NRC Information Notice 92-30, Falsification of Plant Records, were thorough; demonstrating Operations' willingness for critical self-assessment (paragraph 8).

Both units were in cold shutdown for the entire reporting period. A status on licensee outage work activities and progress is contained in paragraph 5.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- K. Ahern, Manager - Operations
- *M. Bradley, Manager - Brunswick Assessment Project
- S. Callis, On-Site Licensing Engineer
- *S. Floyd, Manager - Regulatory Compliance
- R. Godley, Supervisor - Regulatory Compliance
- *R. Halme, Manager - Technical Support
- J. Holder, Manager - Outage Management & Modifications (OM&M)
- B. Leonard, Manager - Training
- P. Leslie, Manager - Security
- *D. Moore, Manager - Maintenance
- R. Poulk, Manager - License Training
- *R. Richey, Vice-President - Brunswick Nuclear Project
- *C. Robertson, Manager - Environmental & Radiological Control
- J. Simon, Manager - Operations Unit 1
- *J. Spencer, General Plant Manager - Brunswick Steam Electric Plant
- R. Tart, Manager - Operations Unit 2
- G. Warriner, Manager - Control and Administration
- *K. Williamson, Manager - Nuclear Engineering Department (Onsite)

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, office personnel and security force members.

*Attended the exit interview.

Acronyms and initialisms used in the report are listed in the last paragraph.

2 Maintenance Observation (62703)

The inspectors observed maintenance activities, interviewed personnel, and reviewed records to verify that work was conducted in accordance with approved procedures, Technical Specifications, and applicable industry codes and standards. The inspectors also verified that: redundant components were operable; administrative controls were followed; tagouts were adequate; personnel were qualified; correct replacement parts were used; radiological controls were proper; fire protection was adequate; quality control hold points were adequate and observed; adequate post-maintenance testing was performed; and independent verification requirements were implemented. The inspectors independently verified that selected equipment was properly returned to service.

The inspectors observed special training provided to Maintenance, Technical Support, and QC personnel by Woodward Governor Company. The training consisted of a one week course of the Brunswick specific

control systems on EDGs, as well as the HPCI and RCIC turbines. Principles of operation, routine maintenance, and calibration topics were presented in detail. The course was considered to be valuable based on observation of the material presented and discussions with plant personnel in attendance.

The inspectors observed/reviewed portions of the following maintenance activities:

PM 82-220L 2A	CONVENTIONAL SERVICE WATER PUMP MOTOR REPLACEMENT
92-PKR 002	EDG No. 2 GOVERNOR PM
92-ABBS1	EDG No. 2 EIGHTEEN MONTH INSPECTION
OPM-GOV003	DG GOVERNOR SPEED LOAD CALIBRATION
PM 87-140	SW BETTERMENT PROGRAM, INSTALLATION OF STAINLESS STEEL SUPPORTS
92-AMQX1	STANDBY LIQUID CONTROL SYSTEM, INSTALLATION OF CONTROL PION FLOW MEASURING DEVICE
92-ARRE1	RHR SW BOOSTER PUMP 2D INSTALLATION AND ALIGNMENT
90-AMQX1	RHR SW BOOSTER PUMP 2B INSTALLATION AND ALIGNMENT
92-AXIM1	CABLE TRAY, CONDUIT AND WIRING SYSTEMS, MINOR MAINTENANCE
92-KAE381	RHR SW 480V DISTRIBUTION SYSTEM PM

Inspector observations of the above maintenance activities noted that applicable WR/JOs and procedures were at the jobsite and were used by those performing the tasks. During alignment of the 2B RHR SW Booster Pump, a laser alignment instrument (Optiline) was used. The licensee has used the Optiline for approximately three years. This instrument has not been calibrated and the results obtained by it are not QC acceptable. As a result, the mechanics must continue to disassemble the Optiline and mount a series of dial indicators to obtain QC acceptable alignment data. This could be resolved with an acceptable instrument calibration.

The licensee implemented a pilot program to issue WR/JOs which allows for the completion of simple tasks on multiple pieces of equipment. The tasks include minor maintenance such as replacing screws, nuts, bolts and conduit support clamps, and adding grounding straps. In the past, a separate WR/JO was issued for work on each piece of equipment. Finding this a cumbersome and inefficient process to accomplish simple tasks, a

team consisting of a maintenance supervisor and three craft persons was organized to implement the pilot program. The inspector reviewed a WR/JO planned to accomplish 13 separate tasks on various pieces of equipment. Accompanying the crew into the field, the inspector observed that they identified three additional deficiencies while accomplishing the above tasks. In addition, the inspector identified four additional deficiencies which were also documented and corrected. The work was organized by plant area and consisted primarily of tightening loose nuts and bolts and replacing missing screws. The inspector concluded that after minor deficiencies in this process are corrected it can be effectively implemented as a routine maintenance activity.

Procedure Upgrades

On August 1, 1992, the licensee initiated a major program to upgrade maintenance procedures. This program includes revising 851 of 2010 existing maintenance procedures. The planned revisions range from minor to major, and all will have a new human factors format. In addition, 557 new procedures are scheduled to be developed. The licensee has completed two procedures and this upgrade program is scheduled to be completed by February 1, 1995. The licensee plans to physically validate many of the upgraded procedures prior to implementation. The validation process will minimize desktop reviews and emphasize field validation. This should provide better quality procedures which require fewer revisions.

General Physics has been contracted to support this program. Thirty-one people, including twenty contractors, have been assigned to the maintenance procedure upgrade. The program is supervised by a CP&L maintenance supervisor.

Violations and deviations were not identified.

3. Surveillance Observation (61726)

The inspectors observed surveillance testing required by Technical Specifications. Through observation, interviews, and record review the inspectors verified that: tests conformed to Technical Specification requirements; administrative controls were followed; personnel were qualified; instrumentation was calibrated; and data was accurate and complete. The inspectors independently verified selected test results and proper return to service of equipment.

PT 12.2.b	DG No. 2 MONTHLY LOAD TEST
92-DDP361	REACTOR RECIRCULATION PUMP SUCTION VALVE (F023B) BREAKER COMPARTMENT PT/PM

The inspector observed that procedures were at the jobsite and being used. The tasks were performed diligently and cautiously. The DG No. 2 Monthly Load Test was adequately supported by Operations and Technical Support.

violations and deviations were not identified.

4. Contractor Staffing for Maintenance and Modification Assistance (61726, 62703)

The inspectors, as a part of routine field observation of maintenance, surveillance and plant modification activities, have observed a steady increase in contractors performing these activities during the current outage. The inspectors have observed these personnel assisting licensee personnel, as well as working independently. Based on the above, a decision was made to review the qualifications and site specific training provided for contractors. After an overview of the currently assigned contractors for all areas, the inspector focused on I&C contractors since their tasks require a high skill level and this appeared to be the area with the largest contractor staffing. At the time of the review there were 56 I&C contractors from Stowe Technical Services Corporation either working or in training to work in the maintenance and outage modification area.

The inspector reviewed the following material to determine the criteria used by the licensee to establish the desired qualifications and training of I&C contractor personnel:

- ANSI N18.1-1971; Selection and Training of Nuclear Power Plant Personnel
- BSEP Volume 1, Book 3; Training, Instruction-Related Technical Training, and On-The-Job Training For Selected Maintenance Classifications (Rev. 010)
- Resumes and training files for Stowe I&C personnel currently on site
- Licensee contract No. XT10000103 with Stowe Engineering Corporation

The licensee committed to meet the training requirements of ANSI 18.1-1971. This states that technicians shall have a minimum of two years working experience in their specialty and should have a minimum of one year of related technical training in addition to this experience. The licensee's contract with Stowe Engineering requires that an I&C Level II technician have a minimum of three years experience and a Level III technician have a minimum of nine years experience. At the time of this review there are 41 Level II and 15 Level III technicians onsite. This exceeds the ANSI 18.1 requirement.

The inspector reviewed the resumes of the 56 Stowe personnel on site and found one example with less than 36 months prior experience. This person had approximately 32 months nuclear experience and had been terminated prior to completing all required training and foreman evaluation required for independent work. The resumes of all other Stowe personnel exceeded the contract requirements, with the average experience of the Level II technician being approximately 12 years.

In addition to the above experience, the licensee developed a training program which requires that all contractor personnel complete approximately two days of orientation training on maintenance procedures, as well as how business and work are conducted. Each person is then given a practical exam which requires the contractor to:

- calibrate a pneumatic indicator
- calibrate a pressure switch
- use basic test equipment
- check for proper operation of a thermocouple
- check for proper operation of an RTD
- calibrate an electronic indicator
- calibrate I/P or E/P transducer
- calibrate E/I or E/E transducer
- terminate or splice cable
- calibrate electronic level transmitter
- calibrate electronic flow transmitter
- calibrate electronic D/P transmitter
- calibrate electronic pressure transmitter

In addition to the above, each contractor may be required to complete up to five weeks basic I&C training and two weeks Technical Specification/LCO plant training. This may be exempted by the contractor's assigned licensee foremen if it is decided that the contractor has, through past experience and work at this and/or other nuclear plants, gained this knowledge.

Once assigned to a crew, the contractor will work under the direct supervision of a qualified CP&L foreman until completing, to the foreman's satisfaction, the applicable requirements for qualification prescribed in Training Instruction 113, Appendix B-1, Instrumentation and Control Technician Qualification Checkout Cards. The inspector reviewed the training records and found that personnel who are permitted to work independently had completed these requirements. The inspector also noted that these contractors have been integrated into the continuing training program provided for licensee technicians. The inspector concluded that the currently assigned Stowe I&C contractor met or exceeded the requirements of ANSI 18.1-1971.

Violations and deviations were not identified.

5. Outage Work Activities (71707)(62703)(37828)

Building Walls

Work continues in this area. Last month, this was reported as 95% complete for the original 18 walls. As a result of the licensee's expanded wall inspection/document review 51 walls were identified to be upgraded, with 26 requiring design fixes. Similarly, 29 of the 90 IEB 80-11 walls were identified as needing design fixes. The present status of the work on these 55 walls is:

DG Building	33 of 42 designs issued (78%) 18 of 42 repairs complete (43%) Overall 60% complete (Deficiencies involve anchor bolting, tornado issues, seismic interactions, and EDG supply/exhaust air.)
Control Building	8 of 11 designs issued (73%) 3 of 11 repairs complete (27%) Overall 50% complete (Deficiencies involve control room habitability, seismic interaction, and tornado issues.)
Reactor Building	0 of 2 designs issued 0 of 2 repairs complete Overall 0% complete (Deficiencies involve seismic interaction.)

The design of the tornado vents for the DG Building is complete and work on this modification is scheduled to start on September 15 and be completed in October. It is estimated that the design work on the remaining walls will also be completed in September. If these dates are met, OM&M estimates that the remaining work on the above walls will be completed by November 1, 1992.

RHR/SW Booster Pump Replacements

1A, 1C, 2A and 2C SW Booster pump bearings and couplings are scheduled to be replaced in September 1992. 2B and 2D pumps, couplings and bases have been reworked and are currently being aligned. These activities are scheduled to be completed during the week of September 7. The same work is scheduled for pumps 1B and 1D with an anticipated completion date of October 9, 1992.

Circulating Water/Service Water Systems

A modified replacement motor has been installed in the 2A Nuclear Service Water Pump. Replacement of corroded supports in the SWPH

continues. Progress on these systems continued, but the licensee appears to have shifted resources to other jobs with higher priority. There is still a considerable amount of painting and preservation work that needs to be completed. Rusted out conduit and cable trays have not been replaced as needed. The chlorine injection piping has been removed from Units 1 and 2. Replacement piping has been installed in Unit 2 and work is in progress to replace the piping in Unit 1. Only one set of circulating water travelling screens has been reworked this outage. There is a definite need for extensive replacement of severely corroded components and increased painting and preservation work around the circulating water travelling screens. The licensee initially dedicated extensive resources to this area, but have shifted these assets to other jobs before the needed work activities were completed.

Diesel Generator Work Activities

The work activities on the exhaust lines and silencers is 97% complete. Work that remains is roofing repairs, painting and paperwork closeout. A two week overhaul on DG2 was completed and the DG was returned to service on September 1. The observed work activities on this DG appeared to have been well planned and effectively coordinated. A one week outage for turbo charger replacement is scheduled to start on DG3 on September 9. A two week refueling outage inspection and overhaul is scheduled to begin on DG2 on September 16. No additional outage work is currently scheduled for DG1.

The work activities to replace the oil soaked Rodofoam seals under the DGs is awaiting procedure preparation. The licensee plans to attempt this work on DG4 and make a determination if the activity can be accomplished on the remaining DGs with the units at power. If this cannot be done then current plans call for maintaining the currently established compensatory fire watch and completing work on the remaining DGs during future outages. (See paragraph 7 - Fire Protection Seals.)

Reactor Recirculation System Ring Header Supports

This item was identified as 25% complete in the July report. Work is 90% complete on Unit 2 with an anticipated completion date of September 7. The work on Unit 1 is 23% complete, awaiting engineering assistance on 4 hangers. The licensee anticipates that all work will be complete on Unit 1 by November 15.

Hardened Wet Well Vents

The design for Unit 2 is scheduled to be released on September 8; however, the licensee is experiencing difficulty in parts procurement. They currently plan to complete all outage required work for Unit 2 during the current outage. Remaining items are to be worked while the unit is at power and required testing will be performed during a planned maintenance mini outage presently scheduled for the Spring of 1993. The entire installation and testing for Unit 1 is planned for its refueling outage which is also presently scheduled for the Spring of 1993.

Maintenance WR/JO Status

Work continued on backlog reduction. Items are being worked and cleared; however, items have not been worked in accordance with the priority assigned to the trouble tickets. Major emphasis has been placed on completion of as many items as possible rather than by priority ranking. There appeared to be three independent schedules being used: SWFCG, POD and Nuclear Engineering Department. At times the schedules appeared to have conflicting priorities. Site management appeared to be aware of this, but was not effectively addressing it. Near the end of the reporting period, efforts were underway to address this issue and establish an integrated schedule. Major outage windows have been established based on the requirement to maintain redundant means of reactor core cooling and reflood capability.

At the end of August, a backlog of 5996 corrective maintenance items remained open. The screening process described in the licensee's July 23 submittal has been initiated; but due to a lack of management guidance and direction, it experienced implementation problems.

The screening process which is used to determine which outstanding WR/JOs will be worked prior to startup has changed since the licensee's July 23 submittal. This process now has initial screening and classification by the system engineer (SE). If the SE determines that an item meets the "other" (Category 7) classification addressed in the licensee's submittal, the item will be passed through SWFCG to provide a date for completion and then to an ad hoc committee which will either agree or disagree with the SE classification. If it is classified as a Category 7 item it will be placed on a list to accomplish after plant startup. To date, approximately 3500 of the backlog items have been placed on the Category 7 list by the SE. Reviews by the ad hoc committee have categorized 2800 of these items as Category 7 and returned the remainder to the SE for further review. All of these items will be reviewed by the PNSC and Plant General Manager prior to startup.

Thus far, SEs have reviewed and classified approximately 120 items as Category 2-6 items that may be deferred until after plant startup. These 120 items have been reviewed by the ad hoc exceptions committee. They have recommended that 62 of the above items be classified a Category 2-6 and that 60 items be further reviewed by the SE. 35 of these items have been reviewed by the PNSC. The PNSC has recommended that all 35 of these items be deferred until after startup. To date, the Plant General Manager and Site Vice President have approved the deferral of 4 of the 35 items. Although the items are approved for deferral, the licensee has stated that they will be worked if a system window of sufficient time becomes available prior to restart.

The inspectors have attended the ad hoc exceptions committee meetings and the PNSC meetings held to discuss the WR/JOs that will be deferred until after plant restart. The personnel assigned to the screening committees and PNSC have experienced difficulty in determining how to classify a significant number of the items they were given to review.

The inspectors noted that if clear management direction and guidance had been provided to the SE, ad hoc committees and PNSC, these reviews could have been conducted in a more orderly and timely manner. It also appears that this review process will occupy a significant amount of the PNSC's available time if all of the proposed exceptions are to receive a thorough review prior to the currently projected Unit 2 and 1 restart dates of November 5, and December 20, 1992, respectively. The inspectors have noted that unless the progress of WR/JO completion accelerates or the projected restart date is delayed, the plant may restart with a larger backlog of WR/JOs than existed when both units were shut down. This, coupled with the fact that the work which has been done was not on items with the highest priority, may significantly reduce the amount of plant improvement achieved during the current outage.

The current status of the backlog is as follows:

	Pre 4/21/92	Post 4/21	Completed Since 4/21	Completed This Month
<u>Unit 1</u>				
Outage	783	666	435	79
Non-outage	993	2012	1365	299
<u>Unit 2</u>				
Outage	673	836	723	156
Non-Outage	1582	2991	2509	560

A further breakdown of the 5996 backlog shows that 2850 of these items are on Unit 2, 2654 are on Unit 1, and 492 are common. Approximately 40 percent of the backlog items are on hold for planning, parts or engineering design or assistance.

Structural Steel

[Phase I - Reactor Building Unit 2]

Final Walkdown Summary:

- Total number of major components6345*
(1 beam = 3 components-beam plus 2 connections)
RHR for Phase I Reactor Bldg. Unit 2 will be done in Phase II only. Increase of 1237 components due primarily to added CRD frames of which a sample of 195 were walked down.
- Number of components walked down as of 8/12/925433*
- Percent walkdown complete (5433/5433)100%
- Number of major components with irregularities804
- Percent with irregularities (804/5433)14.8%

*912 CRD frame (Circa 1987) components (6345-5433) not walked down based on excellent condition of sample evaluated (195).

Summary of Irregularities by Action Code:

Action Code B	336
Irregularities Noted: No Modification Necessary	
Action Code C	132
Irregularities Noted: Modifications Recommended	
Action Code D	336
Further Evaluation Required	
Action Code E	527
Component Inaccessible	

The majority of irregularities are of the three following general types: configuration different from design, weld quality and missing bolts, washers and nuts.

Note: The number of irregularities (Types B, C, and D) and inaccessible components (Type E) listed above have changed somewhat from what was previously reported. The database for this information has been reviewed and checked by the licensee as part of the irregularity resolution effort and the data presented is a result of that process.

[Phase I - Reactor Building Unit 1]

- Total number of major components(estimate)...5703
(1 beam = 3 components-beam plus 2 connections)
- Number of components walked down as of 9/01/924533
- Percent walkdown complete (4533/5703)79%

[Phase II - Drywell Unit 2]

- Total number of major components(estimate)...2250
- Number of components walked down as of 9/01/921098
- Percent of walkdown complete 1098/225049%

[Phase II - Reactor Building Unit 2]

- Total number major components(estimate)...5433
- Number of components walked down as of 9/01/9226
- Percent walkdown complete 26/54335%

Current Walkdown Schedule:

	Drywell		Reactor Bldg.		RHR	
	St	Cpt	St	Cpt	St	Cpt
<u>Unit 1</u>						
Phase 1	N/A	N/A	8/8A	9/10	N/A	N/A
Phase 2	9/17	10/31	*9/8	10/17 9/8	9/21	
<u>Unit 2</u>						
Phase 1	N/A	N/A	6/26A	8/12A	N/A	N/A
Phase 2	7/25A	9/23	9/28	12/3	8/19A	9/9

* Walkdown date changed to support completion of Unit 2 Reactor Building, Phase II RHR.

Instrument Rack Replacement

The instrument racks at elevation minus 17 for Unit 2 have been removed. Fabrication efforts are underway on three racks for Unit 2 and two racks for Unit 1. The licensee estimates that this activity is approximately 25% complete on Unit 2 and anticipates that work will be complete on Unit 2 by October 26 and Unit 1 by November 24. This item may become a critical path for the currently scheduled restart dates for units 1 and 2.

Drywell and Torus Inspection

As a result of the problems identified with structural steel in the reactor buildings and drywells, a decision was made to conduct engineering walkdown inspections of the Units 1 and 2 drywells and tori. These inspections were to look for discrepancies other than structural steel. The walkdown of the tori in Units 1 and 2 and the Drywell in Unit 1 is complete. The Unit 2 Drywell walkdown is scheduled to be completed by mid-September. To date, the licensee has not identified any operability discrepancies. The inspector will review these discrepancy lists as they are completed.

Painting, Preservation and Decontamination

Extensive cleanup efforts are underway in the Reactor Feed Pump and Feedwater Heater Rooms. Strippable paint and steam cleaning has been used in the Reactor Feed Pump Room, and vacuum floor strippers are being used in the Feedwater Heater Rooms. The licensee plans to clean these previously contaminated areas to a level that will permit routine access.

The licensee has dedicated assets to remove all miscellaneous radioactive parts that were stored in the spent fuel pools. It is anticipated that this activity will be completed for both pools in early September. Additional efforts are underway to scope and correct leaks in the Unit 2 spent fuel pool and determine an acceptable method of

removing the floor contamination from the Radwaste Phase Separator room. The licensee continues to work on plans for resolving these items.

Short-Term Structural Integrity (STSI)

A backlog of 212 STSI items existed when the units were shutdown. 25 items have been added and 63 items have been corrected since that date. Approximately 17 items were corrected during the reporting period. In the July report (325,324/92-21) the inspector indicated that the licensee planned to conduct independent reviews of the STSI items which would remain open after plant restart. The licensee has clarified this independent assessment to be a third party programmatic review. This was completed in August with no significant adverse findings. In addition to the above, engineering has stated that they will review each STSI item that will remain open after startup to ensure that the existing condition does not effect safe unit operation.

Operator Work Arounds

	Unit 1 (8/10)	(8/27)	Unit 2 (8/10)	(8/27)
Disabled Annunciators	19	20	20	20
Clearance Tags More Than 30 days	41	37	36	64
Temporary Caution Tags	82	77	45	46
RTGB WR/JOs	46	49	52	47
Jumpers - Electrical	1	1	10	11
Increased Surveil-PTs	7	7	11	9
Jumpers - Mechanical	--	--	3	7
Active LCOs	10	13	15	15
Others	81	87	61	71
Total	287	291	253	290

Partial Arc Admission/EHC System Rework Unit 2

The inspectors noted in the July report that the licensee planned to return the turbine from three to two arc admission. However, after review of the newly prepared control valve curves and discussion with the vendor during the latter part of August, the licensee determined that operation with two arc admission could result in operation in an unstable region of the curves. Based on the above, it appears that the control valves will be set to operate with three arc admission. The inspector will continue to follow licensee activities as they progress on the system.

Outage Staffing

The technical support staff has been augmented by approximately 50 contract personnel to assist in resolving backlogs, working new and emergent issues and developing programmatic and process changes. The onsite NED staff has been augmented with approximately 100 contract and corporate personnel to assist them in handling backlog and emergent engineering issues. In addition, Bechtel currently has approximately 169 engineers on site working the emergent structural steel issue. The maintenance staff has been supplemented with approximately 150 contractor and 70 personnel from the licensee's traveling maintenance crews. Maintenance has also added approximately 17 planners to assist with planning, and plans are underway to add 12 additional planners. OM&M has added 556 personnel to work modifications and special tasks during this outage. As usual for outages, HP and Decontamination control staffs are increased as needed to support plant and outage activities, as well as other initiatives.

Staff Assistance Team

An additional member has been added to this team to assist in upgrading procedures and processes in the Regulatory Compliance and corrective action areas. Discussion with the manager of this team and review of the weekly progress reports indicate that progress is being made in all areas. The anticipated fall schedule for completing some of the projects may be delayed due to the heavy workloads currently being experienced by plant functional areas. The following is a summary of the current status of Staff Assistance Team activities:

Total projects identified to date	72
Projects completed	8
Projects ahead of schedule	6
Projects behind schedule	15
Projects on schedule	43

6. Operational Safety Verification (71707)

The inspectors verified that Unit 1 and Unit 2 were operated in compliance with Technical Specifications and other regulatory requirements by direct observations of activities, facility tours, discussions with personnel, review of records and independent verification of safety system status.

The inspectors verified that control room manning requirements of 10 CFR 50.34 and the Technical Specifications were met. Control operator, shift supervisor, clearance, STA, daily and standing instructions and jumper/bypass logs were reviewed to obtain information concerning operating trends and out of service safety systems to ensure that there were no conflicts with Technical Specification Limiting Conditions for Operations. Direct observations of control room panels and instrumentation and recorder traces important to safety were conducted to verify operability and that operating parameters were within Technical Specification limits. The inspectors observed shift turnovers to verify that system status continuity was maintained. The inspectors also verified the status of selected control room annunciators.

Operability of a selected Engineered Safety Feature division was verified weekly by ensuring that: each accessible valve in the flow path was in its correct position; each power supply and breaker was closed for components that must activate upon an initiation signal; the RHR subsystem cross-tie valve for each unit was closed with the power removed from the valve operator; there was no leakage of major components; there was proper lubrication and cooling water available; and conditions did not exist which could prevent fulfillment of the system's functional requirements. Instrumentation essential to system actuation or performance was verified operable by observing on-scale indication and proper instrument valve lineup, if accessible. The inspector also verified that adequate means of core cooling and reflood capability was maintained while the units were in cold shutdown.

The inspectors verified that the licensee's HP policies and procedures were followed. This included observation of HP practices and a review of area surveys, radiation work permits, posting and instrument calibration.

The inspectors verified by general observations that: the security organization was properly manned and security personnel were capable of performing their assigned functions; persons and packages were checked prior to entry into the PA; vehicles were properly authorized, searched and escorted within the PA; persons within the PA displayed photo identification badges; personnel in vital areas were authorized; effective compensatory measures were employed when required; and security's response to threats or alarms was adequate.

The inspectors also observed plant housekeeping controls, verified the position of certain containment isolation valves, checked clearances and verified the operability of onsite and offsite emergency power sources.

Violations and deviations were not identified.

7. Engineering

Drawing Backlog (37702)

The inspector had previously observed (Inspection Report 325,324/92-15) that the number of overdue engineering drawing revisions had increased from 300 to 1,445 in a 12-month period ending May 24, 1992. The ratio of overdue revisions

to out-of-date drawings had increased from 25 to 79 percent. The inspector reviewed the drawing backlog on August 31, 1992, and noted that the licensee had made progress in reversing this trend. As of August 30, the number of overdue revisions had decreased to 1322 which is 69 percent of all out-of-date drawings. Listed below are the number of out-of-date drawings and overdue revisions with time requirements.

<u>Time change required</u>	<u>Drawings not up to date</u>	<u>Overdue revisions</u>	<u>Ratio (%)</u>
Every design change	3	3	100
After 14 days	499	383	77
After 2 changes or one month	604	499	83
After 4 changes or six months	813	437	54
Total	1919	1322	69%

The licensee has set October 31, 1992, as the date to resolve the backlog. The mechanical and I&C drawings appear on target with 588 and 1053, respectively. There are 497 outstanding electrical drawings which is 142 drawings above the present target amount. The civil department with 534 outstanding drawings is significantly ahead of its present target of 652 drawings. If current progress is sustained, it appears that NED's backlog elimination date is achievable.

The inspector has identified that the licensee's document control program is more people dependant than programmatically controlled. It is the individual document holder's responsibility to ensure that he uses the current revision rather than document control ensuring that each person has only the correct revision available. This weakness was illustrated by an NRC inspector finding out-of-date drawings and procedures in the control room relay cabinets (IR 325,324/92-11). Also, occurrences of procedures being used with outstanding "must have" revision requests have been identified (IR 325,324/92-04). The inspector also found that NED provides advance copies of drawing changes directly to the control room rather than through document control. Based on these indicators, the licensee plans to review (and upgrade accordingly) the control and issuance of documents. This will be tracked as IFI 325,324/92-22-01, pending further inspection of this area.

Fire Protection Seals

A review of specification 118-003, "Specification for Selection and Installation of Fire Barrier Protection Seals," Revision 5, and DG-IV.0020, "NED Design Guide for Fire Barrier Inspections at the Brunswick Steam Electric Plant," Rev. 0, revealed that Penetration Seals are only evaluated for fire requirements. The inspector has requested the licensee provide a list of multi-purpose penetration seals (i.e., seismic, flooding, etc.). The inspector has discussed the licensee's fire barrier inspection program with engineering and specifically questioned the inspection coverage for multi-purpose penetration barriers. The licensee is researching and has not yet responded to the inspector's questions. This item will be reviewed further in the next monthly inspection report.

Each EDG is mounted on a concrete pedestal and there is a one-inch gap between the pedestal and the concrete diesel cell floor slab. This space is filled with Rodofoam which is a uni-cellular non-extruding PVC foam filler that was originally installed for seismic purposes. 10CFR50, Appendix R requires that the floors of the diesel cells be fire resistant. Rodofoam does not meet the required three hour fire resistance rating. EER85-0186 was written in 1985 to justify the adequacy of Rodofoam as a fire seal. This evaluation addressed the temperature at which Rodofoam supports ignition, but does not address the temperature at which it melts. This temperature could affect its fire resistance capability. Due to the concern that the melting temperature is below the ignition point, the inspector requested that the licensee determine which type of Rodofoam is installed and its physical properties.

The installed Rodofoam seals are soaked with fuel and lubricating oil and do not meet the conditions used in the evaluation. A program is being developed to replace the Rodofoam with an improved product. Various methods are being evaluated to remove the existing seal. A pilot project is planned for EDG No. 4 to remove the existing seal utilizing a hydro-laser type method from underneath the cell floor slab. The pilot project will start shortly; however, no firm schedule has been established. The licensee estimates that it will take approximately one month per unit to remove the sealing material if the hydro-laser method does not work. This item will be discussed with regional fire protection personnel and be tracked and reviewed further in the next resident inspection report.

8. Verification of Plant Records TI 2515/115

On April 20, 1992, Operations commenced a review of Auxiliary Operator compliance with required vital area rounds. This was based on events at other plants where evidence of record falsification with regard to rounds was discovered. Subsequently, NRC published IN 92-30, Falsification of Plant Records and TI 2515/115, Verification of Plant Records, on April 23 and May 29, 1992, respectively.

The licensee's review was a detailed comparison of AO rounds documentation with the security computer logs of vital area access. The time period selected (January 4 through March 27, 1992) was prior to operators' awareness of the events at the other sites. This also covered an operating period when both units were in various modes of operation and included all operating shifts. In all, 1362 vital area entries were checked. Several reconciliations were needed to eliminate false discrepancies due to administrative causes (i.e., intrashift AO turnovers) and security computer limitations (i.e., cardreader failures and keycard replacement). Thirty-three discrepancies resulted.

Twenty-six discrepancies involved the diesel fuel Four Day Tank area. These discrepancies were randomly distributed throughout the period and across all operating shifts. The licensee concluded that the procedure requirement to enter this area was confusing. Discussions with AOs substantiated this conclusion. Though considering the licensee's conclusion reasonable, the inspector noted that the Four Day Tank Room area, located underground adjacent

to the CG building, represented the most likely vital area for willful rounds omission based on the location and the simplicity of the equipment. No instrument readings are required to be taken in this area. There was no evidence of willful falsification discovered and no other area had more than three discrepancies.

Of the seven remaining discrepancies, two were dispositioned as false based on interviews with the individuals and evidence of an effective, but unauthorized "buddy" system where rounds were documented as complete based on reports from other qualified operators performing the required checks. AOs interviewed stated this was a frequent practice, especially during non-routine periods. The inspector concluded that if properly controlled, this was an acceptable practice, but the licensee has not established appropriate guidance.

One discrepancy revealed a training weakness in that a recently qualified AO did not understand the requirement to enter the Control Building HVAC area as part of the Turbine Building rounds. The licensee was sensitive to the implications of this example and was determining the extent of the problem and appropriate corrective actions.

One discrepancy was dismissed based on further security computer checks that showed a coinciding time period when the computer could not account for the individual's location in the protected area.

The three remaining discrepancies involved the same individual for two entries into the Cable Spread area and one entry into the Control Building HVAC area. No firm evidence could be established to support either falsification or explainable circumstances to account for the missed entries. Entries by other AOs were made into the areas, but no log entries were made to indicate these entries were for the purpose of making rounds. The licensee concluded that falsification did not occur based primarily on the otherwise commendable performance of the individual. However, the licensee also concluded that this case and others discussed above did not represent good watch-standing or log-taking practices. This was reviewed with on-shift operators. A procedure revision was made to clarify requirements for vital area entry (e.g., Four Day Tank area).

A by-product of the licensee's investigation was the opportunity to assess the quality of AO rounds based on the duration in an area. Times were comparable between shift crews, but some areas (i.e., CB HVAC and Four Day Tank area) were shorter than expected. The licensee is still evaluating this issue.

The inspector concluded that the investigation was thorough and covered a statistically significant sample. The early attention to this issue is noteworthy and demonstrated Operations' willingness for critical self-assessment. This had been criticized in an earlier inspection documented in Inspection Report 325,324/92-12.

Violation and deviations were not identified.

9. Temporary Modifications

Weaknesses in the licensee's Temporary Modification process were discussed in Inspection Reports 325,324/92-04 and 325,324/92-21. Programmatic corrective actions committed to in response to a Notice of Violation issued with Inspection Report 325,324/92-04 (dated April 28, 1992) regarding temporary modifications are still in progress. As discussed below, the inspector identified another example of these weaknesses during this inspection period.

SRV pilot assemblies in both units have been removed for set point testing. Following removal, the pilot ports were plugged and valve openings blanked to provide closure in the event that the main steam lines are filled for condenser cooling or MSIV LLRT. This work was accomplished using OCM-VSR503, Maintenance Instructions for Target Rock Safety Relief Valve, Two Stage, Model 7567F, Revision 2. Prior to performing this work EER 92-0240 was completed providing the basis for pressure vessel over pressure protection without functional SRVs. As in the NOV example (Inspection Report 325,324/92-04) with an RHRGW booster pump blank flange, the EER thoroughly addressed the complicated technical issues but failed to recognize fundamental temporary modification practices such as testing of the new temporary pressure boundaries. In this case acceptance testing was specifically listed as "none." The ASME code requires that a system pressure test be conducted following replacement of pressure boundary parts. For this case an applied pressure test is not reasonable, but some assurance that a leak tight closure exists is warranted to prevent unnecessary leakage and spread of contamination. The NRC considers visual verification that the temporary closures are not leaking upon vessel flood-up to the steam lines to be a prudent acceptance test. Condenser cooling was initiated for Unit 2 on August 14, 1992, but no inspections of the SRV temporary closures took place.

Following several days of condenser cooling operation, elevated temperatures on several SRV tailpipes were identified. This is most likely due to leakage through the pilot valve port around the temporary plug, or as a result of the plug falling out. The licensee stated that the plugs have come loose in the past and were found in valve bodies when the pilot assemblies were reinstalled. The inspector determined that no capture devices, (i.e. lanyards) were used to prevent loss of the internal plugs. Accordingly, the licensee took this under consideration.

There is minimal safety significance associated with this item, but its occurrence following the previously cited temporary modification issue serves as an example that the interim corrective actions were unsuccessful and pending corrective actions need to be systemic.

10. Onsite Review Committee (40500)

The inspectors attended selected Plant Nuclear Safety Committee (PNSC) meetings conducted during the period. The inspectors verified that the meetings were conducted in accordance with Technical Specification requirements regarding quorum membership, review process, frequency and personnel qualifications. Meeting minutes were reviewed to confirm that

decisions and recommendations were reflected in the minutes and followup of corrective actions was completed.

The inspectors attended all PNSC meetings where WR/JO exceptions were reviewed. The PNSC experienced difficulty in reviewing and reaching agreement on the classification of a number of exception forms. This appeared to be the result of a lack of clear management guidance for this area. Other than the above, the inspectors did not identify any safety concerns with issues discussed at these meetings.

11. Exit Interview (30703)

The inspection scope and findings were summarized on September 4, 1992, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings in the summary. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

<u>Item Number</u>	<u>Description/Reference Paragraph</u>
IFI 92-22-01	Followup on the licensee's review of control and issuance of documents (paragraph 7).

12. Acronyms and Initialisms

AO	Auxiliary Operator
ASME	American Society for Mechanical Engineers
BSEP	Brunswick Steam Electric Plant
CB	Control Building
CP&L	Carolina Power & Light Company
DG	Diesel Generator
EDG	Emergency Diesel Generator
EER	Engineering Evaluation Report
EHC	Electro Hydraulic Control System
HP	Health Physics
HPCI	High Pressure Coolant Injection
HVAC	Heating Ventilation and Air Conditioning
I&C	Instrumentation and Control
IFI	Inspector Followup Item
IR	Inspection Report
LCO	Limiting Conditions for Operation
LLRT	Local Leak Rate Test
MSIV	Main Steam Isolation Valve
NOV	Notice of Violation
NED	Nuclear Engineering Department
NRC	Nuclear Regulatory Commission
OM&M	Outage Management and Modification
PA	Protected Area
PM	Preventive Maintenance
PNSC	Plant Nuclear Safety Committee
POD	Plan of the Day

PT	Periodic Test
QC	Quality Control
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SE	System Engineer
SRV	Safety Relief Valve
STA	Shift Technical Advisor
STSI	Short Term Structural Integrity
SW	Service Water
SWFCG	Site Work Force Control Group
SWPH	Service Water Pump House
WR/JO	Work Request/Job Order