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REGION II

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Licensee: Carolina Power & Light (CP&L)

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road SE
Southport, NC 28461

Dates: July 6 - August 15, 1997

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Enclosure 2

EXECUTIVE SUMMARY

Brunswick Steam Electric Plant, Units 1 & 2
NRC Inspection Report 50-325/97-09, 50-324/97-09

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, chemistry control, and engineering inspection by regional inspectors.

Operations

- A walkdown of the 2B loop of Core Spray revealed that the breaker and valve line-ups were positioned in accordance with procedure, no valve packing or stem leakage was observed, and area housekeeping was adequate. (Section 02.1)
- The inspector reviewed housekeeping for the Unit 1 Reactor Building. Areas observed were maintained free of transient combustible materials, and equipment storage areas were adequately maintained. Licensee efforts have resulted in a reduction in the number of contaminated liquid catch containers. (Section 02.2)
- The inspector concluded that several errors were made during vendor supplied fuel sipping activities resulting in placement of a leaking fuel bundle back into the core reload. This is identified as a weakness in the licensee's control and oversight of contractor fuel sipping activities. (Section 07.1)
- The licensee determined that a backlog of 150 items in the corrective action database were overdue. Increased management attention and routine tracking of all items has resulted in a reduction in the backlog. (Section 07.2)

Maintenance

- Adequate preparation and communication was observed during the performance of the surveillance testing observed. Procedures addressing Technical Specification (TS) requirements were in use and properly performed by the technicians. (Section M1.3)
- The inspector concluded that the licensee was making progress with minor seal leakage repairs to the control room pressure boundary. (Section M2.1)
- The inspector concluded that the daily surveillance records were being maintained current and accurate. (Section M3.1)

Engineering

- A violation was identified for failure of licensee engineers to consider Environmental Qualification (EQ) requirements in engineering evaluations. A violation was also identified for deficiencies (failure

to follow procedures) in preparation of Qualification Data Packages. Unresolved items were identified pending further review of the accuracy of measured temperature data used in EQ evaluations and whether depressurization on the electrical penetrations affected EQ requirements. A weakness was identified regarding use of draft documents in EQ evaluations. The licensee's progress to correct the EQ program deficiencies was delayed due to findings identified by the inspectors and through licensee self assessments. (Section E1.1 and E8.7)

- Self-Assessment CES 97-011 was adequate in evaluating the licensee's EQ program recovery effort. No actual or potential operability problems were identified. However, concerns were identified which could potentially affect the technical adequacy of the licensee's corrective actions. (Section E7.1)
- The inspector concluded that the modification to relocate the chlorine detector to improve system reliability was performed with only minor documentation errors. (Section E7.2)

Plant Support

- The licensee maintained an effective program to monitor and control liquid and gaseous radioactive effluents. Doses to members of the public were a small percentage of regulatory limits. The radioactive material released to the environment from liquid and gaseous effluents for 1995, 1996, and the first half of 1997 was a small fraction of the 10 CFR 20, Appendix B and 10 CFR 50, Appendix I limits. (Section R1.1)
- The radiological controls program was effectively implemented with good occupational exposure controls observed during normal plant operations. The licensee effectively controlled operational site exposures to record low levels with sitewide dose performance at 79 person rem for the first six months of 1997. Licensee actions initiated to address unresolved dose monitoring and TLD background subtraction issues were determined by the inspectors to be comprehensive. (Section R1.2)
- The licensee implemented an effective program for packaging, preparation, and transport of radioactive material and conducted the program without incident during the period reviewed. The transportation and shipping program and procedures had been revised consistent with the revised 10 CFR 71 requirements. One violation was identified for failure of RP Technicians to complete qualification requirements prior to conducting tasks independently. Another violation was identified for failure to comply with transportation of radioactive material audit requirements per 10 CFR 71.137. (Section R1.3)
- The inspector observed the breaching of the RCA boundary by a forklift operator without the required Health Physics technician evaluation. A weakness was identified in contractor knowledge of requirements for the release of radioactive material from the RCA. (Section R4.1)

- Improper processing of changes to fire protection instrumentation surveillance procedures resulted in establishment of fire watches throughout both units and support buildings. This condition was promptly identified and corrected by the performance of the missed surveillances in those affected areas. A Non-cited violation was issued for the missed Fire Protection surveillance testing. (Section F3.1)
- The inspector identified a violation for the failure by the licensee to implement vendor recommendations for an existing preventive maintenance procedure. Proper integration of this experience may have reduced the number of spurious alarms received. (Section F3.2)

Report Details

Summary of Plant Status

Unit 1 operated continuously during this period. Two control rods remain inserted around an identified fuel pin leaker. At the end of the period the unit had been on-line 283 days.

Unit 2 operated continuously during this period. At the end of the period the unit had been on-line 338 days.

The mechanical vacuum pumps remained tagged out on both units due to concerns 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.

Due to an identified discrepancy between TS required suppression chamber water level and water volume, the licensee has issued Standing Instruction, SI 97-031, to maintain a more conservative water level band until a TS amendment is approved. The SI directs operations to maintain level between -27.5 inches and -29.5 inches compared to TS values of -27 inches to -31 inches. The inspectors have observed compliance with this SI during routine tours of the control room.

Due to concerns about the control room dose the licensee imposed an administrative limit on Iodine until a TS amendment is approved. The licensee made a procedure change to Administrative Procedure OAI-81, Water Chemistry Guidelines, setting the limit at 0.1 microcurie per gram dose equivalent Iodine 131 compared to a TS value of 0.2 microcurie per gram. Also, the licensee has been providing weekly data to NRR and the resident inspector for review. None of the data reviewed has exceeded the administrative limit.

Seven of 13 Justification for Continued Operation (JCO) in the Environmental Qualification (EQ) of equipment area remain open for both units. The following provides the status of the EQ JCOs and associated ESRs (ESRs):

- 1) ESR 96-00425, Evaluation of EQ sealants was considered closed by the licensee.
- 2) ESR 97-00331 (old ESR 96-00503), Associated Circuit EQ was closed by the licensee.
- 3) ESR 96-00426, Evaluation Quality class and EQ classification of Post Accident Sample System (PASS) valves was scheduled for completion June 6, 1997, but revised to October 31, 1997.
- 4) ESR 97-00330 (old ESR 96-00501), MCC EQ was closed by the licensee.
- 5) ESR 97-00329 (old ESR 96-00625), EQ Type JCO for EQ Fuses Without a Qualification Data Package (QDP) was considered closed by the licensee.

- 6) ESR 97-00340 (old ESR 96-00627), QDP for Marathon 300 Terminal Blocks was scheduled for completion December 31, 1997 but revised to August 1, 1997.
- 7) ESR 97-00087, EQ-Type JCO for Improperly Configured Conduit Seal was considered closed by the licensee.
- 8) ESR 97-00229, JCO for GE CR 151 B Terminal Blocks was scheduled to be completed September 1, 1997.
- 9) ESR 97-00238, JCO for Standby Gas Treatment Motor Operated Valve (MOV) Position Indicator Rheostat, was considered closed by the licensee.
- 10) ESR 97-00250, Conduit Union in EQ Boundary, was scheduled for completion December 31, 1997
- 11) ESR 97-00256, Main Steam Insulation Valve (MSIV) Hiller Actuator JCO, was scheduled for completion September 2, 1997.
- 12) ESR 97-00289, PASS Valve Limit Switch Panel Wiring, scheduled for completion September 15, 1997.
- 13) ESR 97-00343, Qualification of Kulka Model 600 Terminal Blocks was scheduled for completion September 1, 1997.

In summary, both units operated continuously during this report period. However, there were nine outstanding JCOs in the EQ area. The mechanical vacuum pump remained tagged out due to concerns related to Rod Drop Accident analysis.

I. Operations

02 Operational Status of Facilities and Equipment

02.1 Core Spray Walkdown

a. Inspection Scope (71707)

The inspector verified that the B loop of the Unit 2 Core Spray system was in the proper line-up, the line-up matched plant drawings, and that housekeeping in the area was acceptable.

b. Observations and Findings

On July 21, 1997 the inspector verified the electrical breaker and valve line-ups for the Unit 2B loop of Core Spray in accordance with Operating Procedure 20P-18, Core Spray System Operating Procedure. The inspector verified that the electrical breaker and valve line-ups for those valves which were accessible were properly positioned. Valves in the system were installed correctly and no packing leakage was observed. System components were properly labeled and no equipment was stored in the area which might threaten system performance. Housekeeping was adequate, although maintenance activities being conducted on the next elevation were affecting the cleanliness of the area. No transient combustibles were identified in the area, nor were any ignition sources observed.

c. Conclusions

A walkdown of the 2B loop of Core Spray revealed that the breaker and valve line-ups were positioned in accordance with procedure, no valve packing or stem leakage was observed, and area housekeeping was adequate.

02.2 Housekeeping

a. Inspection Scope (71707)

During routine tours of the Unit 1 Reactor Building, the inspector observed the material condition of equipment and components.

b. Observations and Findings

The inspector observed the adequacy of housekeeping during tours of the Unit 1 Reactor Building. The inspector noted that areas were maintained free of transient combustible materials. Equipment laydown areas observed were adequately maintained and components properly stored in designated areas. The inspector noted several contaminated liquid catch containers throughout the unit. After reviewing the Unit 1 Leak Log, many of the containers identified had been in place for over four months and could have been removed while on-line. This included contaminated liquid catch containers off the Reactor Core Isolation Cooling (RCIC) keepfill relief valve and the RCIC drain for the injection valve.

Temporary hoses were observed directing leakage from the High Pressure Coolant Injection turbine barometric condenser catch tray, from Hydraulic Control Unit 1-C11-V103 for Control Rod 14-31 and a large plastic sheet was being used to prevent leakage on the 80 foot elevation from wetting down the 1B Standby Gas Treatment train. In addition, a bucket was being used to catch leakage from Service Water Valve V132, and a green poly bag was being used to catch leakage from Fire Protection Valve V1021. The inspector discussed the observation with the licensee. The licensee was trending the number of catch containers used. Overall, the number of contaminated liquid catch containers has been reduced.

c. Conclusions

The inspector reviewed housekeeping for the Unit 1 Reactor Building. Areas observed were maintained free of transient combustible materials, and equipment storage areas were adequately maintained. Licensee efforts have results in a reduction in the number of contaminated liquid catch containers.

07 Quality Assurance in Operations

07.1 Fuel Sipping Activities

a. Inspection Scope (71707)

The inspector reviewed the results of recent fuel sipping activities in the Unit 1 spent fuel pool.

b. Observations and Findings

The inspector reviewed Condition Report (CR) 97-01449, Unit 1 Fuel Leak-Degrading Offgas (Incorrect Identification of YJB-777 as Fuel Leak). During the last Unit 1 refueling outage, fuel bundle YJB-777 was identified as a fuel leaker and not returned to the core. During the current operating cycle an increase in offgas occurred resulting in insertion of two control rods around a suspected fuel leaker to suppress the neutron flux.

Fuel sipping activities were performed by a vendor using an in-core or in-line process that consisted of placing the sipping head over several bundles in the fuel pool storage rack. This process requires no actual fuel bundle movement, which differs from vacuum sipping where a fuel bundle is placed in a chamber.

During the week of June 23, 1997, both vacuum sipping and in-core or in-line sipping was performed on bundle YJB-777 in the spent fuel pool. Both fuel sipping methods indicated that YJB-777 was not a fuel leaker. The licensee's assessment concluded that the leaking bundle found during the outage was not YJB-777 but another bundle (YJB-787) which was reinstalled in the reactor. The licensee determined that an error was probably made twice due to placing the sipping head on the wrong fuel bundle. The licensee determined through root cause analysis that the self-checking and verification process was not adequate nor reliable.

The inspector reviewed the licensee's control of these activities. The licensee required a refueling floor Senior Reactor Operator (SRO) be in charge for activities involving fuel movement. Also, core map verification required a stringent verification of core fuel loading. This fuel sipping process involved activities that did not require an SRO, since no fuel movement took place. The actual core loading was correct, despite the licensee inadvertently placing the leaking fuel bundle back into the core.

The licensee's corrective action was to have the vendor that performed the sipping operation address the findings of the root cause analysis and train licensee personnel on oversight of refuel floor vendor activities.

c. Conclusions

The inspector concluded that several errors were made during vendor supplied fuel sipping activities resulting in placement of a leaking fuel bundle back into the core reload. This is identified as a weakness in the licensee's control and oversight of contractor fuel sipping activities.

07.2 Corrective Action Program Backlog

a. Inspection Scope (71707)

The inspector reviewed the Corrective Action Program (CAP) backlog.

b. Observations and Findings

On July 25, 1997, during a management meeting, the CAP supervisor indicated that 190 items in the CAP database were overdue. Of those reviewed 127 had review times in excess of two weeks. This discrepancy was identified in CR 97-2573, Overdue CAPS Actions. The inspector reviewed a listing of the items and determined that at least seven corrective action items were overdue by months. Many of the excessively overdue items were assigned to individuals no longer employed with the licensee. The inspector discussed these findings with the licensee.

The licensee indicated that previously only high priority items were being routinely tracked, therefore the level 3 backlog was masked due to tracking of only level 1 and 2 items. To maintain an appropriate level of management attention to the backlog, the licensee indicated that level 3 overdue items would be routinely tracked and weekly reports would be made to update the status of the overdue items. Since identification of this backlog, routine tracking and increased management attention has resulted in a 20 percent reduction in the backlog.

c. Conclusion

The licensee determined that a backlog of 190 items in the corrective action database were overdue. Increased management attention and routine tracking of all items has resulted in a reduction in the backlog.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Jet Pump Operability Periodic Test

a. Inspection Scope (61726)

The inspector reviewed conformance of test results to TS requirements for reactor recirculation jet pump operability.

b. Observations and Findings

The inspector reviewed the July 31, 1997, performances of Periodic Test OPT-13.1, Reactor Recirculation Jet Pump Operability, for both units. This procedure verified the recirculation and jet pump flows, and that the individual jet pump diffuser-to-lower plenum pounds per square inch differential readings were within the established speed-flow characteristic curves. The procedures used were properly verified to be the right revision. The acceptance criteria was found to be in accordance with the TSs. The inspector verified that the evaluation performed was correct and the data indicated satisfactory completion of the surveillance test.

M1.2 Condensate Storage Tank Low Water Channel Calibration

a. Inspection Scope (61726)

The inspector observed sections of the performances of the Unit 1 and 2 High Pressure Core Injection (HPCI) and RCIC Condensate Storage Tank (CST) Low Water Level Instrument Channel Calibration.

b. Observations and Findings

On July 1, 1997, the inspector observed portions of the Unit 1 and 2 performances of Maintenance Surveillance Test 1(2) MST-HPCI27Q, HPCI and RCIC CST Low Water Level Instrument Channel Calibration. This procedure verified that on a sensed low water supply signal on the CST the appropriate valves realign to the torus for continued HPCI and/or RCIC operation. The inspector observed the pre-job briefings for both units. The briefings were conducted using Attachment 1 of Operating Instruction OOI-1.04, Communications. The performance steps were summarized and expected control room annunciators discussed. Communication was satisfactorily established and conducted. The inspector verified that the procedures in use were properly verified and met the TS surveillance requirements. Both tests were completed satisfactorily.

M1.3 Maintenance Conclusions

Adequate preparation and communication was observed during the performance of the surveillance testing observed. Procedures addressing TS requirements were in use and properly performed by the technicians.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Control Room Pressure Boundary

a. Inspection Scope (62707)

The inspector observed sealing of the control room electrical cable penetrations during the inspection period.

b. Observations and Findings

On several occasions during the inspection period, the inspector observed sealing of penetration in the control room boundary. As part of the Control Building HVAC upgrade project the licensee has been making seal repairs to improve the control room pressure boundary. This will allow the control room to maintain a more positive pressure during accident conditions to prevent radiological or toxic hazards from entering the control room.

The inspector observed sealing activities in the control room floor inside electrical panels. Caulking was applied to the cable seals and tested using a simulated smoke spray. Progress on the sealing activities and repair schedule was discussed with the project manager. Several hundred minor caulking repairs have been made. A pressure test is currently scheduled for September 4, 1997, to determine the effects of the sealing efforts.

c. Conclusions

The inspector concluded that the licensee was making progress with minor seal leakage repairs to the control room pressure boundary.

M3 Maintenance Procedures and Documentation

M3.1 Surveillance Logs

a. Inspection Scope (61726)

On July 30, 1997, the daily TS required surveillances were reviewed in the control room.

b. Observations and Findings

The inspector reviewed several procedures to verify that the daily surveillance items were being properly performed. The following procedures were reviewed:

- 10I-03.1, Control Operator Daily Surveillance Report
- 10I-0.3.4.1, Unit 1 Control Operator Daily Check Sheet
- 20I-03.2, Control Operator Daily Surveillance Report
- 20I-3.4.1, Unit 2 Control Operator Daily Check Sheet

All entries were verified to be current and any inoperable equipment was properly annotated as to the cause. The inspector verified that the calculations of drywell leakage were correct. Torus water levels were being maintained at the administrative limits pending approval of a TS amendment. All other values recorded were within the established acceptance bands.

c. Conclusions

The inspector concluded that the daily surveillance records were being maintained current and accurate.

III. Engineering

E1 Conduct of Engineering

E1.1 Environmental Qualification

a. Inspection Scope (37550)

The inspectors reviewed the licensee's corrective actions for the EQ program, in response to findings identified during Self-Assessments 95-0041 and 96-0271 and the violations identified in NRC Inspection Report 50-325(324)/96-14.

b. Observations and Findings

1) EQ Equipment Inspection

The inspectors, accompanied by licensee EQ engineers, performed walkdown inspections of safety related motor control centers (MCCs) in the Units 1 and 2 reactor buildings. The following MCCs were examined during the walkdowns: Unit 1 MCCs 1XA-2, 1XB-2, 1XA, 1XB, 1XC, 1XD, 1XE, 1XF, 1XJ, 1XK, 1XL, 1XM, 1XDA, & 1XDB, and Unit 2 MCCs 2XA-2, 2XB-2, 2XA, 2XB, 2XC, 2XD, 2XF, 2XG, 2XH, 2XJ, 2XK, 2XL, 2XM, 2XDA, & 2XDB.

The purpose for examining the MCCs was to verify that the as-built configuration of the MCCs was similar to that evaluated in Qualification Data Package (QDP) 67 and that deviations from the qualified configuration had been evaluated. The inspectors also verified that openings in the MCCs had been sealed as required to comply with the EQ boundary conditions specified in the QDP. The gasket materials around the MCC doors had been replaced in 1996 as part of the corrective actions for CR 96-02545. In addition, the walkdown verified that the openings in the MCC transformer compartments had been properly sealed with the transformers de-energized. The inspectors noted that the back panel doors on some of the MCCs were not flush against the gasket in all cases, but this was judged to be acceptable. The inspectors also identified a temporary power cable which had been installed through the top of MCC 2XH. Discussions with licensee engineers and review of documentation disclosed that the cable had been installed as a temporary power supply under CP&L procedure OENP-14, Temporary Power Feed Documentation, Revision 8, dated January 17, 1997. The opening into the MCC had been sealed with a watertight cable fitting, a Crouse Hinds CGB fitting. A note in the installation package specified the following requirement: "In order to ensure

that the environmental qualification of the motor control center is maintained, instructions for the installation or removal of the temporary power shall include verification that all openings made to accommodate the installation have been properly closed and sealed to maintain thermal integrity."

Procedure OENP-14 requires temporary power installations which are installed/connected to permanent plant equipment be evaluated on an ESR. The requirements for ESRs, which are stated in CP&L procedure NGGC-EGR-0005, require ESRs to be evaluated for EQ considerations. ESR 97-00258 which was prepared to approve the installation of the temporary fuel pool cooling system power connection to Unit 2 MCC 2XH did not evaluate the installation for EQ. The Crouse Hinds CGB was not addressed in the licensee's EQ program. A QDP had not been prepared to address the acceptability of this component and its capability of maintaining the EQ boundary. The licensee issued CR 97-02643 to document and disposition this problem. A JCO was also prepared (ESR 97-00435) to address the EQ of the Crouse-Hinds fitting on the operability, for EQ considerations, of the MCC.

The failure to evaluate the temporary power cable installation for EQ considerations is a violation. This violation is identified as VIO 50-325(324)/97-09-01, Failure to Consider EQ Requirements in Engineering Evaluations.

2) Review of Qualification Data Packages (QDP)

The inspectors reviewed QDP No. 67, Qualification Data Package For General Electric Company (GE) IC 7700 Series Motor Control Centers (MCCs) For Brunswick Service Conditions, Revision 6, to determine if it adequately demonstrated EQ for the safety related MCCs in accordance with 10 CFR 50.49 and appropriate licensee EQ procedures. The GE MCCs located on the 20, 50, and 80 foot elevations of the Units 1 and 2 Reactor Buildings are subject to harsh environments resulting from postulated design basis accidents and have a safety function to mitigate the consequences of these accidents.

Revision 6 to QDP 67 was prepared to document and address the MCCs and to resolve those deficiencies previously identified with EQ of the MCCs which were discussed in NRC Inspection Reports 50-325 (324)/96-14. These deficiencies included the failure to utilize the worst case postulated High Energy Line Break (HELB) profiles and incorrect assumptions in the analysis regarding MCC panel seals and intact door gaskets. This QDP had been reformatted and re-issued under the new guidance of Procedure EGR-NGGC-0156, Environmental Qualification Of Electric Equipment Important To Safety, Revision 2, dated July 10, 1997. The procedure required EQ equipment to be qualified for normal, abnormal and accident temperatures. The EQ of the MCCs was based on testing of similar

items and analysis. The level of qualification specified in the QDP was NRC DOR Guidelines.

A series of similarity analyses were performed to demonstrate similarity between the tested and supplied configuration. The inspectors reviewed portions of document reference (DR) 232, Nutherm Report No. CPL-7806R, Qualification Test Results Applicable to Brunswick Nuclear Power Plant Safety-Related GE 7700 MCCs, Revision 0, dated June 30, 1997, which documented the similarity analyses.

The inspectors verified that the latest design information on time dependent temperatures and pressures in the reactor buildings, which were documented in the Reactor Building Environmental Report (RBER), Revision 5, dated October 2, 1996, had been used as the basis for qualification of the MCCs. The temperature and pressure data from the RBER was used as a design input to CP&L Document Reference No. DR 227, Brunswick Electric Plant Unit 0 Document Reference for Environmental Qualification Service Conditions, Revision 1, dated June 12, 1997. Document Reference DR 227 was the design output document that summarized the latest available design data regarding the specific environmental parameters for specific plant locations as a result of normal, abnormal, and accident operating conditions which were used as a design input for Calculation BNP-EQ-3.002, dated June 23, 1997. This calculation was the thermal lag analysis which transposed the temperatures/pressures in the reactor building through the MCC cabinet sheet metal and internal MCC air space and onto the internal MCC components. The postulated worst case HELB accident profile with a peak accident temperature of 267 degrees Fahrenheit was used as a design input into the thermal lag analysis to establish the peak surface temperatures for the MCC components (i.e., breakers, contractors, overload relays, fuses, and etc.). The calculation methodology was based on the guidance of NUREG 0588. The evaluation utilized peak normal temperatures of 104 degrees Fahrenheit as the initial conditions prior to the HELB. Abnormal temperatures were not considered or discussed in the calculation.

The inspectors noted that DR 227 had 29 open items in the Open Items Log and contained references to three draft documents. The open items were not being tracked by the licensee for resolution. The licensee issued CR 97-02627 on July 30, 1997, to track these open items. The following specific references were listed in DR-227, Revision 2, as "DRAFT" documents:

- Reference 9, Determination of Drywell TID Contribution from Steam Lines with the Use of HWC, Brunswick Nuclear Plant, Units 1 and 2, United Engineers and Constructors, UE&C Calculation No. OHWCH-1001, Revision 0, February 2, 1996 (DRAFT)

- Reference 59, Engineering Service Request No. 96-00717, Q-Class A Components Excluded From the EQ Program; 4KV Distribution System, Revision 0, (DRAFT).
- Reference 60, Engineering Service Request No. 96-00720, Q-Class A Components Excluded From the EQ Program; IR-Aux. Control Board, Revision 0, (DRAFT).

The licensee indicated that the above draft documents had been identified in Open Items Nos. 15 and 25. The licensee indicated that ESR 96-00717 (Ref. 59) and ESR 96-00720 (Ref. 60) were used as inputs for the EQ master list (EQML) and would not affect the environmental data in DR-227. The licensee considered the use of Reference 9 to be conservative in regards to DR-227 because it increased the radiation dose in DR-227. The inspectors identified the use of "Draft" documents to be a weakness.

The inspectors reviewed Revision 6 of QDP 67. The design input for the QDP included the RBER, Revision 5, DR 227, Revision 0, and Calculation number BNP-EQ-3.002, Revision 1. The environmental parameters considered in the EQ of the MCCs, documented in Table 3.1 of the QDP included a normal temperature of 104 degrees Fahrenheit and the HELB temperature of 267 degrees Fahrenheit. For abnormal temperature, the statement LATER is noted in Table 3.1. An open item had been identified by the licensee to incorporate the abnormal temperature environment upon issuance of Revision 1 to Document Reference No. DR 227. The inspectors noted during the review of Revision 6 to QDP 67 that this item was still open and the abnormal temperature data had not been incorporated in the QDP.

The inspectors also noted that a discussion in paragraph 3.4.1.1 of the QDP indicated that for normal temperatures, a value of 85/95 degrees Fahrenheit was used in the analysis for thermal aging. This value was based on actual measured temperatures recorded between January 1, 1992, and December 31, 1993. This data was referenced in Engineering Evaluation Reports (EERs) 94-0083 and 94-00424. These EERs were apparently prepared to justify the life extension of the Control Rod Drive (CRD) scram solenoid pilot valves. The inspectors noted that these EERs had not been referenced in either the RBER or DR 227. The inspectors questioned whether these temperature data were representative of the actual normal long term operating temperatures since the plant had not operated for an extended period in 1992 and 1993. Pending further review of the 85/95 degrees Fahrenheit temperature data value, and the evaluation for the life extension of the CRD scram solenoid valves, the item was identified to the licensee as Unresolved Item 50-325(324)/97-09-02, Accuracy of Measured Temperature Data used in EQ Evaluations.

The inspectors also noted that DR 227 had been revised since issuance of the QDP. These revisions did not affect the normal or

accident service environments utilized in the development of Revision 6 to QDP 67. However, as stated above, the abnormal temperature conditions had not been incorporated in the QDP as documented by Open Item Number 3 against the QDP. The inspectors noted that a total of seven open items were identified in the Open Item Record Log in the QDP. Upon further review the inspectors learned that these items were not being adequately tracked by the licensee. On August 1, 1997, the licensee issued CR 97-02640 to have the QDP open items tracked using a CAPS action item number.

On July 9, 1997, Revision 6 to QDP 67 was issued. Based on the issuance of QDP-67, ESR 96-00501 was subsequently issued. This resulted in closure of the JCO for the MCCs. On August 4, 1997, the inspectors questioned licensee engineers regarding the need to consider abnormal temperatures in Calculation BNP-EQ-3.002 and their effect on qualification of the MCCs. The specific question concerned whether an abnormal temperature value, that is a value in excess of the 104 degrees Fahrenheit peak normal temperature, should have been used in the thermal lag analysis as the initial temperature. The inspectors performed additional review of documents discussed above and questioned whether controls were in place for operators to initiate any actions if the temperatures in the reactor building exceeded 104 degrees Fahrenheit. The inspectors noted that Procedure EOP-SCCP-03, Secondary Containment Control Procedure, specified operator actions to scram the reactor when temperatures in the proximity of the MCCs exceed 140 degrees Fahrenheit. These actions are to protect EQ equipment. The inspectors concluded that the issued QDP did not comply with the technical requirements of Procedure NGGC-EGR-0156 since abnormal temperatures had not been evaluated in the QDP, and there were still several open technical issues in Revision 6 of QDP-67 and DR-227. On August 22, 1997, the inspectors questioned the licensee regarding their justification for closure of the JCO, the basis for the temperature data used in the QDP, plans for resolution of the open items, and whether controls were in place to maintain the reactor building temperatures below 104 degrees Fahrenheit. On August 25, 1997, subsequent to the inspection, the licensee provided additional information on the temperature data, and a copy of portions of Procedure 20I-03.4.2, Auxiliary Operator Daily Check Sheet, which directed the auxiliary operators to measure the temperatures once per shift in the RHR and HPCI rooms, and start the room coolers in cases when the temperatures exceed 104 degrees Fahrenheit. These rooms are located at elevation -17, whereas the MCCs are located on elevations 20, 50, and 80. The inspectors questioned whether the licensee had any controls in place for operators to measure and maintain the temperatures in the proximity of the MCCs below 104 degrees Fahrenheit. Late in the afternoon of August 25, the licensee notified NRC Region 2 that no procedure existed to maintain the normal temperature in the reactor building below 104 degrees Fahrenheit in the proximity of the MCCs. The licensee stated that

instructions had been issued to operations to contact engineering if the temperature exceeded 104 degrees Fahrenheit.

As stated above, CP&L Procedure EGR-NGGC-0156 provides instructions for establishing, maintaining, and implementing the requirements of 10 CFR 50.49, Environmental Qualification. The inspectors identified the following four examples of failure to implement the requirements of Procedure NGGC-EGR-0156 in preparation of QDP-67:

- The open items in QDP-67 were not tracked as required by the QDP instruction (9) of Attachment 2 of NGGC-EGR-0156.
- The open items in DR 227 were not tracked as required by paragraph 4.4.3 of Attachment 2 to NGGC-EGR-0156.
- A JCO was not prepared to address the fact that EQ of the MCCs was indeterminate pertaining to abnormal temperature conditions as required by paragraph 9.3.2 of Procedure NGGC-EGR-0156.
- The MCCs were not evaluated for abnormal temperatures as required by QDP instructions (32) and (64) of Attachment 2 to Procedure NGGC-EGR-0156.

The revisions to QDP-67 were required as part of the licensee's corrective actions to violations identified during the inspection documented in NRC Inspection Report 50-325(324)/96-14. The failure to implement the above four requirements in Procedure NGGC-EGR-0156 in preparation of QDP-67 is a violation. This violation is identified as four examples of VIO 50-325(324)/97-09-03, Deficiencies in Preparation of Qualification Data Packages.

3) Review of Raychem Splice Installation Procedures

The inspectors reviewed the following documents which specified the requirements for installation of Raychem splices:

- CP&L Specification 048-012, Revision 14, dated April 8, 1997, Installation of Electrical Cables.
- CP&L Procedure JEMP-007, Revision 2, dated February 5, 1997, Splicing of Wires and Cables.
- Drawing number F-03630, Penetration and Splice Box Thermocouple Cable Splice Detail.

Procedure JEMP-007 refers to Special Process Procedures 0-SPP-CBL-004, -004A, and -004B. The inspectors determined that these procedures which were written for use by craft personnel for

installation of Raychem splices, had been either canceled or deleted by the licensee. Review of Specification 048-012 and Procedure EMP-007 disclosed that the requirements for Raychem splices were adequately addressed in these documents. However Specification 048-012 is 171 pages in length and procedure EMP-007 is 101 pages in length. These documents are difficult and cumbersome for craft personnel to use as guidance in field installation of the Raychem splices since they contain excessive detail and address numerous other cable installation work items.

4) Electrical Penetration Leakage

Three Unit 1 and five Unit 2 drywell electrical penetrations were found which had an internal pressure reading of 0 pounds per square inch. The penetrations had no nitrogen blanket and the licensee issued CR 97-02673 to document and disposition this problem. Licensee engineers determined that this problem did not affect primary containment integrity since the nitrogen pressure was not part of the safety related pressure boundary. The inspectors questioned the impact of the lack of the nitrogen blanket on the EQ of the penetrations. Licensee EQ engineers determined, based on engineering judgement, that the unpressurized penetrations did not affect EQ. This judgement was based in part, on experience, and due to the fact that the penetration test reports did not address whether the penetrations had been pressurized during testing. Further justification of this conclusion was provided by the licensee based on their December 5, 1977, response to IE Bulletin 77-06, Potential Problems with Containment Electrical Penetration Assemblies. The inspectors noted that the bulletin response did not adequately address the effect of loss of the nitrogen blanket on the environmental qualification of the penetrations. The inspectors questioned the adequacy of the licensee's evaluation of this issue. Pending further review by the licensee and the NRC of the qualification test report for the penetrations, and the tested configuration (pressurized or unpressurized) this issue was identified to the licensee as Unresolved Item 50-325(324)/97-09-04, Effect of Depressurized Electrical Penetrations on EQ Requirements.

c. Conclusions

Two violations and two unresolved items were identified. The violations identified were indicative of a lack of progress and failure to address the previously identified issue from NRC Inspection Report No. 50-325(324)/97-14 regarding inadequate corrective action. The licensee's corrective actions regarding the environmental qualification of the GE MCCs were found to be conditional due to the large number of QDP and DR 227 open items. The licensee's failure to track and resolve the QDP and DR open items could have led to additional qualification deficiencies. A weakness was identified regarding use of draft documents in preparation of DR 227.

E3 Engineering Procedures and Documentation

E3.1 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 inspector reviewed the UFSAR for inconsistencies with the CS system and did not identify any discrepancies between the drawings, operating procedure line-up, and the associated UFSAR process diagram.

As a result of the inspection activities noted in Section F3.1, the inspector reviewed portions of UFSAR Section 9.5.1, Fire Protection System. The inspector determined that the applicable code of record governing the testing frequencies was National Fire Protection Association (NFPA) Code 72E-1974. The inspector identified that the modification of the fire protection surveillance frequencies from 6 months to a year constituted a change from the NFPA code of record. These changes should have been reflected in either the UFSAR or the Fire Hazard Analysis (FHA) in accordance with the guidance provided in Generic Letter 86-10. The inspector determined that no changes to the Fire Protection Program as approved had been identified in the UFSAR. In addition the inspector determined that the FHA had not been updated since 1993. This discrepancy will be tracked as part of Unresolved Item URI 50-325(324)/96-05-02, FSAR Discrepancies.

E7 Quality Assurance in Engineering Activity

E.7.1 Licensee Self Assessments

a. Inspection Scope (37550)

The inspectors reviewed a self-assessment which was performed to determine the effectiveness of the Environmental Qualification Reconstitution Project.

b. Observation and Findings

The inspectors reviewed Self-Assessment CES-97-011, BNP Environmental Qualification Program, which was performed from June 2 to 18, 1997, by the CP&L Chief Engineer's Section from the Corporate Nuclear Engineering Department. Two independent consultants were included on the assessment team. The scope included a review of the corrective actions completed to date and the planned future corrective actions, to determine if these corrective actions, when completed would result in an effective EQ program which complied with the requirements of 10 CFR 50.49. The self

assessment identified six strengths, seven issues, 16 weaknesses, and six items for management consideration. The self assessment findings included administrative issues which generally addressed ways to improve work processes but did not impact the technical quality of the work; and also technical issues which could potentially affect the technical adequacy or conclusions of the work product. The results of the self assessment indicated that the EQ program recovery effort had made progress in correction of the violations identified in NRC Inspection Report 50-325(324)/96-14. However, an issue was identified regarding the overall management of the EQ recovery project. Conditions reports have been initiated by the licensee to document issues and weaknesses from the self assessment in the corrective action program.

c. Conclusions

Self-Assessment CES 97-011 was adequate in evaluating the licensee's EQ program recovery effort. No actual or potential operability problems were identified. However, concerns were identified which could potentially affect the technical adequacy of the licensee's corrective actions.

E7.2 Relocation of Control Building Chlorine Sensors

a. Inspection Scope (37551)

The inspector reviewed the quality of the modification that relocated the chlorine sensors.

b. Observations and Findings

This modification was performed under ESR 97-00147, Chlorine Detector Relocation. Due to the history of failures associated with the chlorine detectors as documented in Licensee Event Reports (LERs) 50-325(324)/95-02, 50-325(324)/96-05, and 50-325(324)/96-12, the licensee committed to relocate the detectors to a less harsh environment.

The inspector reviewed the ESR and associated modification in the field with emphasis on the quality of the modification work. The chlorine detectors were relocated from the intake air plenum inlet to behind the air filter to improve reliability. The high air flow and lack of filtration were thought to be the most probable root cause of sensor failure.

The inspector inspected the physical installation of the modification. The detectors support mechanical integrity was reviewed. The cable routing was inspected. No deficiencies were noted.

The inspector noted that the licensee issued two CRs associated with the modification. These were CR 97-02321, ESR 97-00147 Conduit Supports, and CR 97-02323 Lack of Span Verification. These issues were documentation issues and did not affect the operability of the modification.

Additionally, the inspector noted that on July 24, 1997, the licensee made a four-hour report to the NRC concerning the Control Building Emergency Air Filtration (CBEAF) aligned to the chlorine protection mode because of an actual chlorine leak. The chlorine leak developed after the system was returned to service following maintenance activities. Although the long term reliability of the system has not been demonstrated, during an actual event the system operated as designed.

c. Conclusions

The inspector concluded that the modification to relocate the chlorine detector to improve system reliability was performed with only minor documentation errors.

E.8 Miscellaneous Engineering Issues (92903)

E.8.1 (Open) Inspector Followup Item 50-325(324)/96-14-05: Effect of EQ Accuracy on Instrument Setpoint Calculations.

Review of procedures and various documents by an independent consultant resulted in a number of questions regarding the effect of environmental effects (uncertainties) on instrument accuracy. The questions and concerns were documented in an E-mail message dated June 20, 1997, subject EQ and Instrument Accuracy from Iepson Engineering to CP&L. Procedure EGR-NGGC-0153, Engineering Instrument Setpoints, Revision 2, dated February 12, 1997, specifies the methodology for instrument uncertainty and scaling calculations. The procedure also defines those instrument loops which, as a minimum, require documented instrument uncertainty and scaling calculations. In order to address the issues raised in the June 20 E-mail message, a review of instrument setpoint calculations was performed by licensee instrumentation and controls (I&C) engineers. The review found that the setpoints and uncertainty were properly applied in accordance with the methodology specified in Procedure EGR-NGGC-0153. However, this was not well documented in many of the calculations. The licensee plans to issue an ESR, 97-00426, to document the results of the review, and to revise the calculations as necessary to clearly document the basis for the instrument setpoints and uncertainty margins. This IFI will remain open pending further review by the NRC.

E.8.2 (Closed) Violation 50-325/96-15-07: Engineering and Installation Problems for USI A-46 Electrical Cabinet Modifications

The licensee responded to this violation in a letter dated December 20, 1996. Subject: Reply to Notice of Violation. The licensee attributed the cause of the violation to be a failure of modification implementation personnel to comply with procedure requirements and failure to perform adequate verification of completed work. Craft personnel either failed to obtain engineering direction to resolve questions, or engineering personnel failed to revise design drawings to ensure discrepancies were properly resolved. The licensee issued CR 96-03485 to document and disposition the identified problem. Walkdown

inspections were performed by licensee engineers which identified some additional examples of errors similar to those identified in the violation. These errors were documented and corrected. The inspectors reviewed the records of the walkdown inspections which were documented on modification turnover sheets. Craft personnel were counseled on the need for obtaining engineering direction for resolving discrepancies encountered during implementation of field activities and for ensuring installed work was consistent with design drawings. Engineering personnel were counseled on the importance of ensuring that necessary revisions to design drawings are processed in a timely manner. Additional training was conducted for engineering personnel on the modification drawing revision process, including the rapid field release. The lessons learned were incorporated into the seismic qualification utilities group implementation plan.

E.8.3 (Closed) Violation 50-325(324)/97-02-07: ESR Design Verification Requirements.

The licensee responded to this violation in a letter dated April 30, 1997, Subject: Reply to Notice of Violation. The licensee attributed the cause of the violation to be an inappropriate interpretation of the definition of a design change. The licensee's corrective actions included revision of procedure EGR-NGGC-0005, Engineering Service Requests, to require design verification of configuration change ESRs. The inspectors reviewed Revision 4 of EGR-NGGC-0005, dated March 25, 1997, and verified that the design verification requirements of 10 CFR 50, Appendix B, Criterion III, had been incorporated into the procedure. Previously completed ESRs which had not been design verified were design verified by a qualified design verifier. The inspectors reviewed a random sample of the 76 ESRs which had not been previously design verified and determined that the required design verifications had been completed.

E.8.4 (Closed) Violation 50-324/97-03-01: Failure to Perform Reportable Event Evaluation for Past Operability of the Unit 2 RWCU Due to Improperly Installed Seals in Rosemount Transmitters.

The licensee responded to this violation in a letter dated May 30, 1997, Subject: Reply to Notice of Violation. The licensee attributed the cause of the violation to be failure of the individual responsible to obtain proper documentation that issue regarding the improperly installed seals was not reportable under 10 CFR 50.72 (4-hour report). The issue should have been classified as potentially reportable under 10 CFR 50.73 (30-day report). The individual was counseled on the importance of using a valid basis for operability evaluations and the need to formally document evaluations under the corrective action program to ensure formal documented evaluations are performed. Additional corrective actions included training of engineering personnel on the importance of documenting and communicating in a timely manner the results of evaluations which could impact event reportability. The inspectors reviewed the results of the quarterly continuing engineering training which was conducted on May 21, 22, 28, and June 6, 1997 to

review this violation and other engineering subjects. The inspectors noted that the corrective action program was also discussed in detail at these training sessions. The licensee performed an evaluation of the improperly installed RWCU system seals and determined that since the instrumentation was capable of performing its intended function, the event was not required to be reported. The inspectors concurred with the evaluation.

E.8.5 (Closed) Violation 50-325(324)/97-03-02: Failure to Incorporate an Engineering Service Request in a Change to the UFSAR.

The licensee responded to this violation in a letter dated May 30, 1997, Subject: Reply to Notice of Violation. The licensee attributed the failure to update the UFSAR to lack of attention to detail by the individuals responsible for preparation of ESR 96-00017. ESR 96-00017 was developed to convert a temporary modification implemented under ESR 94-00712 into a permanent modification. The licensee initiated CR 97-01039 to document this problem. Investigation of this problem disclosed that the original 10 CFR 50.59 safety evaluation performed for ESR 94-00712 fully bounded the permanent change. However the change to the electrical panel distribution circuit labeling shown on UFSAR figure 8.3.1-9 was not identified. The UFSAR figure was revised and submitted to NRC as part of Amendment 15 on May 5, 1997. The individuals involved with preparation of ESR 96-00017 were counseled on the importance of thorough and comprehensive review of design changes. The cause and circumstances associated with this violation were also discussed with engineering personnel as part of continued training.

E.8.6 (Open) Unresolved Item 50-325(324)/97-05-06: Deletion of RTT Requirements

Background

Generic Letter (GL) 93-05, Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operations, was issued by the NRC on September 27, 1993. This GL recommended deletion of isolation instrumentation response time testing (RTT) requirements for functions where the required response time corresponded to the diesel generator start time. The GL specifically stated that a TS amendment was required to delete these response time testing requirements from the TS.

On December 29, 1993, NRC issued GL 93-08, Relocation of Technical Specification Tables of Instrument Response Time Limits. The GL encouraged licensees to submit a TS Amendment request to relocate these tables to the UFSAR and then control changes to the tables using the 10 CFR 50.59 process. The licensee requested an amendment to relocate the tables from the TS to the FSAR which was approved by NRC in TS Amendments 171 and 202 which were issued on May 31, 1994. Performance of RTT was still required in the TS. The licensee incorporated the tables into the UFSAR as change Number 31 which was issued by the licensee on June 17, 1994.

On October 3, 1994, the licensee issued UFSAR change log number 94FSAR056 which deleted the isolation response time testing requirements for instrumentation with the required response time corresponded to the diesel generator start time. This change was made in accordance with the recommendations contained in GL 93-05. The requirement to perform RTT was still in the TS, when the testing requirements were deleted from the procedures. The licensee revised the implementing plant procedures after the UFSAR change was issued. The UFSAR change was not submitted to NRC prior to elimination of RTT for the instrumentation covered by GL 93-05.

The BWR Owners Group submitted a report titled: BWR Owners Group Licensing Topical Report NEDO-32291, System Analyses for Elimination of Selected Response Time Testing Requirements, January 1994, in a letter to NRC dated January 14, 1994. The report concluded that instrument calibration of selected instruments would provide the data to detect degradation of RTT, and that RTT could be eliminated from surveillance requirements. These instruments were not included in GL 93-05. The NRC issued a Safety Evaluation Report (SER) in a letter to the BWR Owners Group dated December 28, 1994. The SER approved the NEDO 32291 Report and provided guidance to licensees on the information required to be submitted with TS change requests to implement the NEDO-32291 recommendations. On February 14, 1995, the licensee initiated UFSAR change log number 95FSAR100 to implement the recommendations of NEDO-32291. The implementing plant procedures were revised after the UFSAR change was issued by the licensee and the RTT of instrumentation covered by NEDO-32291 was deleted. The requirement to perform RTT was still in the TS, when the testing requirements were deleted from the procedures. The UFSAR change was not submitted to NRC prior to elimination of the RTT.

On March 21, 1997, the licensee was notified by the NRC of a potential noncompliance with the TSs for inappropriately deleting instrument response time testing surveillance requirements which were required by TS Sections 4.3.1.3, 4.3.2.3, and 4.3.3.3. The licensee requested enforcement discretion to permit continued operation of the Brunswick plant until the issue could be resolved. The NRC exercised discretion not to enforce compliance with the applicable TS sections for a period of 30 days based on an evaluation that granting the request involved minimal or no safety impact on the public health and safety. The licensee submitted a TS change request which requested elimination of RTT covered by GL 93-05 and NEDO-32291. NRC approved the request in TS Amendment numbers 184 and 215 issued on April 18, 1997.

Observations and Findings

The inspectors reviewed the actions surrounding the deletion of the instrument response time surveillance testing. Review of the 10 CFR 50.59 Safety Reviews for UFSAR changes, log numbers 94FSAR056 and 94FSAR100 disclosed that the licensee's reviewers incorrectly concluded that the proposed UFSAR changes did not involve a change to the TSs. The licensee reviewers incorrectly concluded that these UFSAR changes

only affected the Tables relocated from the TS to the UFSAR per the recommendations of GL 93-08 approved by NRC in TS Amendments 171 and 202. 10 CFR 50.59 permits licensees to make changes in the facility or procedures without prior NRC approval unless the proposed change involves an unreviewed safety question or a change in the technical specifications. The elimination of RTT performance requirements did not involve an unreviewed safety question. These changes were recommended by NRC in GL 93-05 and the SER dated December 28, 1994. However, both documents clearly stated that performance requirements of RTT could not be deleted unless a TS change was requested and approved by NRC. The requirements for RTT were specified in TS Sections 4.3.1.3, 4.3.2.3 and 4.3.3.3. This item will remain open pending review by the NRC of the removal of RTT.

E.8.7 (Closed) Unresolved Item 50-325(324)/97-08-06: Failure to Obtain an EQ Disposition on Extension of Vendor Recommended Life for Thermo-Electric Cooler.

In May - June, 1997, the Unit 2 containment atmosphere control (CAS) system instrumentation failed. Investigation of the cause of the problem disclosed that failure of the thermo-electric cooler resulted in the problem. The thermo-electric cooler was replaced. Further review of the thermo-electric cooler failure disclosed that the vendor, Teledyne, issued a 10 CFR Part 21 report in August, 1993, which identified failures of the component and recommended shortening its qualified EQ life from 40 to 2 years. In lieu of replacing the component every two years, the vendor recommended, as an alternative, periodic testing to verify operability. The licensee's system engineer decided to perform testing to verify operability. This was documented on EWR 12721 VR. The inspectors reviewed the EWR and identified that the system engineer did not obtain the concurrence of the EQ engineer as required by Procedure ENP - 020, Engineering Work Request, Paragraph 10.0 of ENP-020 required the EQ engineer to review and concur on all EWRs which affect EQ equipment. The CAC thermo-electric cooler is a component requiring EQ. Failure of the EQ engineer to review and approve the periodic testing of the thermo-electric cooler was identified to the licensee as another example of Violation 50-325(324)/97-09-01.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Radioactive Effluent Releases

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 operation. The report provides required estimates of radiation doses to members of the public from effluents released to unrestricted areas.

Based on an evaluation of this report, the inspector determined if the licensee had implemented an effective program to monitor and control radiation doses associated with effluent releases within the required limits specified by TS 3.11.

b. Observations and Findings

As shown in the effluent release summary below, the amount of activity released during 1995, 1996, and the first half of 1997 in liquid effluent streams remained relatively stable, on a reducing trend, and well within regulatory release limits. The amounts of activity released during the first half of 1997 as fission gases, iodines, and particulates in gaseous effluents were also at low levels and within release limits. Minor variances in gaseous effluent parameters within operational limits were identified between 1995, 1996, and the first half of 1997 indicative of normal steady state power operations. No abnormal releases were identified during the period.

Brunswick Radioactive Effluent Release Summary

	1995	1996	1997 (6 mos.)
Abnormal Releases (No.)			
Liquid	0	0	0
Gaseous	0	0	0
Activity Released (curies)			
a. Liquid			
1. Fission and Activation Products	.415	.04	1.4E-4
2. Tritium	55.2	47.2	12.58
b. Gaseous (curies)			
1. Noble Gases	4330	713	174
2. Iodine 131	5.32E-03	2.12E-02	8.66E-03
3. Particulates	2.24E-02	6.36E-03	1.55E-03
4. Tritium	3.66E+01	2.70E+01	1.26E+01

During 1996 and the first half of 1997, the licensee achieved low levels of liquid effluents largely due to a liquid effluent reduction plan initiative that included the recovery of radwaste systems. As a result of the radwaste system upgrade project, a majority of floor and equipment drain quality water was reclaimed, resulting in a significant reduction in liquid effluent volume and curies. Less than three million gallons of radioactive liquid effluents were released during 1996 as a result of the radwaste project which represents a record low release volume for the site. Significant improvement has continued into 1997 with only a small fraction (.11 million gallons) of the previous year's volume released during the first six months of 1997. A total of only nine liquid releases were made during the first half of 1997 compared with 176 releases made during the first half of 1996. All resultant doses from liquid effluent releases, calculated in accordance with the methodology of the Offsite Dose Calculation Manual (ODCM), were less

than one percent of TS 3.11.1.2 limits. Gaseous effluents for the first six months of 1997 remained at a stable level comparable with prior year levels except for the year of 1995. During 1995, curies of noble gases were elevated due to the presence of a fuel defect in Unit 2 and problems associated with bypass leakage of a Unit 2 offgas bypass valve. Thus far in 1997, slightly increased emissions of Iodine-131 are attributable to a defective fuel element in Unit 1. Particulates discharged are lower in 1997 due to no outage this year to date although a September 1997 outage is planned. Curies of tritium released in 1997 are at levels generally consistent with release trends of recent years. Gaseous releases were all less than 1 percent of applicable TS 3.11.2.2 and TS 3.11.2.3 limits. All calculated doses from liquid and gaseous releases were determined to be less than 1 percent of the applicable TS dose limits.

c. Conclusions

The licensee maintained an effective program to monitor and control liquid and gaseous radioactive effluents. Doses to members of the public were a small percentage of regulatory limits. The radioactive material released to the environment from liquid and gaseous effluents for 1995, 1996, and the first half of 1997 was a small fraction of the 10 CFR 20, Appendix B and 10 CFR 50, Appendix I limits.

R1.2 External Occupational Exposure Control and Personal Dosimetry

a. Inspection Scope(83750)

The inspector evaluated licensee radiological controls against the applicable requirements of 10 CFR Part 20, TS, and the UFSAR. The inspector toured the radiation controlled area and observed compliance of licensee personnel with radiation protection procedures for routine work evolutions. The inspector evaluated the adequacy of licensee upgrades to site dosimetry/personnel monitoring practices to address NRC concerns identified in Brunswick Inspection Report 50-325 (324)/96-16 as Unresolved Item (URI) 50-325(324)/96-16-03, Unresolved Item for Lack of Accurate Dose Tracking and Dose Assignment Practices.

b. Observations and Findings

The inspector found that controls for external occupational exposures met applicable regulatory requirements and were designed to maintain exposures As Low As Reasonably Achievable (ALARA). The inspector reviewed selected radiation work permits (RWPs) utilized to control ongoing work within the radiation controlled area (RCA) and noted that the radiation controls observed were appropriate for the described tasks and radiological conditions. Radiation workers were observed 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 inspector noted good radiological posting practices throughout the plant. During facility walkdowns, the inspector noted a recently completed upgrade to the radiation control

area boundary. The boundary expansion eliminated 11 satellite RCAs and reduced the number of RCA exits from 12 to 4. This change has resulted in significantly improved radioactive material control. During tours of the plant, the inspector observed radiation control (RC) technicians performing radiation and contamination surveys in accordance with procedure. During the first six months of 1997 the licensee has performed well in key radiation control performance areas. The licensee has recently controlled site exposure to the lowest levels ever for the site during power operations with a low 38.88 person rem incurred during second quarter 1997 and 78.88 person rem during the first half of 1997. Personnel Contamination Events (PCEs) have been greatly reduced during the first seven months of 1997 with a PCE ratio of less than .1 PCE per 1000 RWP-Hours through July 1997 and no PCEs reported for the months of April, May, and July 1997. The ALARA program continues to achieve reductions in site dose through a remote monitoring system, hot spot reduction, outage camera upgrades, and aggressive online exposure management. Several feasible ALARA initiatives with significant dose saving potential that were initially planned for 1997 have been cut due to budget concerns. The ALARA initiatives cut included installation of more permanent shielding, decontamination and decommissioning of radwaste equipment, and source term reduction activities.

During inspection activity conducted December 2-6, 1996, the inspector's evaluation of the licensee's dose monitoring procedures indicated that the licensee did not treat dose to occupational workers in buildings outside the protected area fence 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 concern was that occupational dose received by workers outside the restricted area was monitored in accordance with the requirements of 10 CFR 20.1502. An additional concern was whether the licensee could demonstrate, as conservative to safety, the dosimetry practice of subtracting 70 percent of background dose from the sitewide personnel TLDs stored in badge racks at the primary access point to the RCA. In response to these concerns, the licensee documented the issues in CRs, identified root causes, and completed significant corrective actions sufficient to remedy the concerns. These actions included expansion of the population of workers, who will be issued a TLD, to encompass all permanently assigned personnel on site as well as short term visitors immediately upon arrival at the site. Permanent licensee personnel kept their TLDs with them on and off site and, consequently, their dose was effectively monitored at all times while working anywhere on site. During this inspection, the licensee provided an analysis of dose incurred by workers in owner controlled areas outside the restricted area, including doses incurred by workers who required monitoring per 10 CFR 20.1502. The licensee was able to demonstrate through this analysis that reconstructed doses received were of minimal significance from a radiological safety standpoint. Furthermore, the licensee was able to demonstrate through actual TLD data analysis, that the shielded TLDs used for background radiation subtraction effectively

measured less than natural background and, as a result, a more conservative subtraction of less than 100 percent of natural background occurred. These actions adequately address the original safety concerns and, on this basis, URI 50-325(324)/96-16-03, Unresolved Item for lack of accurate dose tracking and dose assignment practices and related procedures, is closed.

c. Conclusions

The radiological controls program was effectively implemented with good occupational exposure controls observed during normal plant operations. The licensee effectively controlled operational site exposures to record low levels with sitewide dose performance at 79 person rem for the first six months of 1997. Licensee actions initiated to address unresolved dose monitoring and TLD background subtraction issues were determined by the inspectors to be comprehensive.

R1.3 Transportation of Radioactive Material

a. Inspection Scope (86750, TI 2515/133)

10 CFR Part 71 established the requirements for packaging, preparation for shipment, and transportation of radioactive materials. 10 CFR Part 71.5 required the licensee to comply with the applicable requirements of the Department of Transportation (DOT) in 49 CFR Parts 170 through 189 when transporting licensed material outside of the confines of the plant. The inspector evaluated the licensee's transportation of radioactive materials program for implementation of these requirements as well as implementation of the revised 49 CFR Parts 100 through 179 and the revised 10 CFR Part 71.

b. Observations and Findings

The inspector evaluated the licensee's preparation of packages for transport and reviewed applicable procedural controls with the licensee for shipments conducted during 1996 and 1997 through the date of inspection. The inspector evaluated shipping checklists prepared by the licensee at the time of shipments to ensure proper packaging, labeling, and placarding of vehicles had occurred prior to shipping radioactive material offsite. The inspector reviewed licensee records for several shipments of radioactive material and determined that required surveys had been performed and that radiation and contamination limits had been met. The inspector reviewed the shipping papers for selected radioactive material shipments and determined that they had been prepared in accordance with procedure. Also reviewed was information required to be included on waste manifests that the waste had been properly classified, described, packaged, and labeled for transport in accordance with regulations.

Concurrent with this evaluation of the licensee's implementation of transportation and shipping programs, the inspector verified that the licensee had revised their procedures to be consistent with the revised

DOT and NRC transportation regulations. This evaluation included a review of training and qualifications of personnel on the new regulations, changes made to the licensee's procedures for the processing and packaging of low specific activity (LSA) and surface contaminated objects (SCO), the use of the international system of units (SI), expansion of the radionuclide list and related changes in limits, and use of the transport index and related changes in fissile material classification. The licensee's transportation and shipping program and procedures for radioactive materials was found to be revised consistent with the requirements of the revised 49 CFR Parts 100-179 and 10 CFR Part 71.

During a review of training and qualification records for personnel involved in shipping activities, the inspector evaluated the qualifications of Radiation Protection (RP) Technicians designated as qualified to prepare spent fuel casks for receipt and shipment. The inspector reviewed training and qualification records for those personnel involved in cask receipt and shipment preparation during the period from 1994 through the end date of inspection. This was a period during which the licensee conducted an active campaign to ship spent fuel assemblies to the Harris Nuclear Plant for interim storage. In order to provide independent RP support for spent fuel shipments using the IF-300 cask, a technician was required by procedure to have completed a cask qualification checkout card (QCC) as part of the cask shipping qualification process. The specific cask preparation QCC used for the purpose of RP Technician qualification was initially implemented in June 1993 and designated as QCC 9.21N (Provide RP support for spent fuel shipments and receipt). Prior to that time, no QCC existed specifically for RP spent fuel cask support, as these tasks were considered basic skills of the craft and were encompassed within more general QCCs such as QCC 4.01 (Providing job coverage in a radiation area per RWP requirements). After June 1993, however, completion of the QCC 9.21N qualification process was required prior to independent conduct of IF-300 cask handling and support activities. During a review of training records and completed qualifications, the inspector determined that two RP Technicians, both of whom had provided independent RP support for 1996 spent fuel cask shipments and had completed procedure signoffs, had not completed QCC 9.21N. Specifically, their QCCs lacked the required task performance evaluation, lacked documentation for required on the job (OTJ) training, and lacked required supervisory approvals. Licensee procedure OTI-100, Conduct of Training, Rev. 13, Paragraph 12, states that, in order to be qualified to perform a task independently, the individual must complete the task performance qualification requirements. Contrary to this procedural requirement, two individuals were identified who had conducted independent RP support for spent fuel shipments during 1996 who were not qualified to conduct this RP support work independently in that they failed to complete the QCC 9.21N task performance qualification requirements. Failure of RP Technicians to complete required qualification requirements prior to performing a task independently is a violation of a OTI-100, Conduct of Training, procedural requirement and is identified as VIO 50-325(324)/97-09-05.

Failure of Technician to Complete Training Qualifications Prior to Performing Tasks Independently.

The inspector evaluated licensee compliance with 10 CFR Part 71.137, Audits, to determine if the licensee had carried out a comprehensive system of periodic audits to verify compliance with all aspects of the quality assurance program and to verify the effectiveness of the program. This issue was previously addressed in Inspection Report 97-05 and identified as URI 50-325(324)/97-05-09. The issue was left unresolved based on the licensee's intent to conduct an assessment of transportation and shipping program quality assurance activities that would accurately demonstrate the extent of compliance with the comprehensive audit requirement. The inspector reviewed documentation of recently completed self assessment activities conducted by the licensee that indicated that not all quality assurance areas of the licensee's transportation and shipping program had been audited in conformance with the requirements of 10 CFR Part 71.137. Areas that were determined not to have been audited sufficiently prior to the NRC identification of the issue in Inspection Report 50-325(324)/97-05 included: Document Control; Instructions, Procedures, Drawings; Procurement Control; Control of Purchased Material, Equipment and Components; Handling, Storage, and Shipping Control, and Quality Assurance Records. In these areas of quality assurance as applicable to the licensee's transportation and shipping program, the licensee had either not performed an audit of sufficient scope to meet the requirements of 10 CFR Part 71.137 or the licensee had failed to document audit activities in a manner sufficient to verify that the audit requirement had been fully met. The licensee's assessment of the implementation of the transportation and shipping program disclosed no safety significant deficiencies. However, upgrades to the Corporate Quality Assurance Program Manual in the area of the radioactive material packaging quality assurance were planned as a result of the assessments of the radioactive material shipping program. Failure to conduct a quality assurance audit that met the requirements of 10 CFR Part 71.137, Audits, is a violation of regulatory requirements and is identified as VIO 50-325(324)/97-09-06, Failure to Comply With Transportation of Radioactive Material Audit Requirements per 10 CFR 71.137.

c. Conclusions

The licensee implemented an effective program for packaging, preparation, and transport of radioactive material and conducted the program without incident during the period reviewed. The transportation and shipping program and procedures had been revised consistent with the revised 10 CFR 71 requirements. One violation was identified for failure of RP Technicians to complete qualification requirements prior to conducting tasks independently. Another violation was identified for failure to comply with transportation of radioactive material audit requirements per 10 CFR 71.137.

R4 Staff Knowledge and Performance in RP&C

R4.1 Radiation Control Area Boundary Breach

a. Inspection Scope (71750)

The inspector observed maintenance activities conducted within the newly extended Radiation Control Area (RCA).

b. Observations and Findings

On July 15, 1997, during routine inspection activities the inspector was monitoring the movement of the supplemental spent fuel pool cooling towers onto the outside 50 foot elevation. During this observation, the inspector noticed contract employees transferring material into the RCA. A contract employee using a forklift backed a trailer up to the RCA boundary. Another contract employee opened the gate, a forklift from within the RCA crossed the RCA boundary to transfer the item into the RCA. During this evolution the inspector observed no health physics technician (HP tech) monitoring the transfer, no licensee representative was present, nor was the forklift evaluated for evidence of contamination, prior to returning to the RCA.

The inspector discussed this event with the licensee, reviewed work request/job order (WR/JO) 97-ABAJ3 and Environmental and Radiation Control Procedure, OE&RC-0215, Removal of Material from the Radiation Control Area. OE&RC-0215 stated that all material shall have a radiological survey performed prior to being released from the RCA. Licensee evaluation of the event determined that the radiological consequences were minor due to the lack of contaminated areas in those areas accessible to the forklift used. Inspector review of the WR/JO required the HP tech to be notified of each activity to be performed prior to work start. During questioning of the contract workers, the inspector determined that the workers did not realize that the evolution performed violated the RCA boundary and therefore required the presence of a HP tech. The inspector determined that adequate oversight and communication of work scope may have prevented this event. The lack of understanding of the requirements for entrance into the RCA by contract workers was seen as a weakness.

c. Conclusion

The inspector observed the breaching of the RCA boundary by a forklift operator without the required Health Physics technician evaluation. A weakness was identified in contractor knowledge of requirements for the release of radioactive material from the RCA.

R8 Miscellaneous RP&C Issues

R8.1 (Closed) Unresolved Item 50-325(324)/97-05-09: Review Licensee Documentation for Compliance with Transportation of Rad Material Audit Requirements Per 10 CFR 71.137.

This URI is closed based on issuance of a violation as discussed in R1.3.

F3 Fire Protection Procedures and Documentation

F3.1 Fire Protection Surveillance Testing Frequency

a. Inspection Scope (61726)

The inspector reviewed the circumstances surrounding the determination that fire protection surveillances had not been performed within the required frequency.

b. Observations and Findings

On June 26, 1998, the licensee declared the fire detection instrumentation inoperable due to exceeding the 6 month required surveillance interval. The inoperable instrumentation was located in both the Reactor, Service Water, Diesel Generator, Auxiliary Off-Gas, and Turbine Buildings. The Control Building test frequency was determined to be within the grace period. Immediate corrective actions consisted of the establishment of fire watches in those areas identified in accordance with Plant Program Procedure OPLP-1.2, Fire Protection System Operability, Action, and Surveillance Requirements. Subsequent review determined that the fire protection operability tests had been established annually despite the fire protection program frequency requirement of 6-month as outlined in OPLP-1.2. This error affected the following periodic tests:

- 1PT-34.4.1.1, Unit 1 Reactor Building Fire Detection Instrumentation
- 2PT-34.4.1.2, Unit 2 Reactor Building Fire Detection Instrumentation
- OPT-34.4.1.3, Control Building Fire Detection Instrumentation Operability
- OPT-34.4.1.4, Diesel Building Fire Detection Instrumentation
- OPT-34.4.1.5, AOG and Service Water Building Fire Detection Instrumentation
- OPT-34.13.2.1, Fire Detection Instrumentation Test: Turbine Buildings 1 and 2

The establishment of the wrong fire protection frequencies was recorded in CR 97-2263, Fire Detector Testing Not Performed.

The inspector reviewed the affected procedures, CRs, verified the establishment of fire watches in accordance with OPLP-1.2, and discussed the findings with the licensee. The inspector observed that the licensee was prompt in the establishment of compensatory measures and operability tests on the fire detection instrumentation were promptly performed and completed satisfactorily. Review of the affected procedures revealed that procedure changes had been made in the periodic tests, but not in the fire protection program document (OPLP-1.2). Therefore, the testing was not being performed in accordance with the frequency established in the Fire Protection Program. The failure to

perform testing within the frequency established in the Fire Protection Program is a violation. This licensee identified and corrected violation is being treated as an Non-cited violation consistent with Section VII.B.1 of the NRC Enforcement Policy and is identified as NCV 50-325(324)/97-09-07, Failure to Perform FP Surveillance Testing.

c. Conclusion

Improper processing of changes to fire protection instrumentation surveillance procedures resulted in the establishment of fire watches throughout both units and support buildings. This condition was promptly identified and corrected by the performance of the missed surveillances in those affected areas. An NCV was issued for the missed Fire Protection surveillance testing.

F3.2 Smoke Detector Sensitivity

a. Inspection Scope (71750)

The inspector reviewed selected instrument performance for the fire detection and suppression systems.

b. Observations and Findings

As discussed in Section F3.1, review of several fire protection periodic test procedures revealed that changes had been made in the test frequency, but not in the fire protection program control document Plant Program Procedure OPLP-1.2, Fire Protection System Operability, Action, and Surveillance Requirements. Consequently, the testing was not being performed in accordance with the frequency established in the Fire Protection Program. During review of this error, the inspector noted that the NFPA Code Section 72-1994, used for this change required the performance of both a functional and a sensitivity test on an annual frequency. Review of the NFPA code of record, Section 72E-1974, required that detectors shall be tested, in place, in accordance with the manufacturer's instructions. The vendor manual stated that ionization detector sensitivity increases with dirt accumulation and should be checked periodically with a sensitivity checker and cleaned if necessary.

The inspector reviewed an event which was recorded in Licensee Event Report (LER) 50-325(324)/92-02, Automatic ESF Actuation of the CBEAF System Due to Simultaneous Fire Alarms in Two Cross Zones of the Control Building. This LER attributed detector cleanliness and failure to maintain awareness of the system's status as factors in the inadvertent actuation of the CBEAF System. In this event, detector sensitivity prevented the immediate resetting of an alarm. This condition combined with a silenced panel alarm resulted in the CBEAF System actuation. Adverse Condition Reports (ACRs) 92-34, 92-362, and 92-836 were written to address LER 50-325(324)/92-02 as well as other deficiencies identified during the CBEAF System actuation event root cause determination. Corrective actions included the establishment of a

preventive maintenance (PM) route to maintain detector cleanliness with additional review to be performed to establish the routes frequency. The inspector located Preventive Maintenance Procedure OPM-DET005, Sensitivity Check for Pyrotronics Ionization Detectors, but observed that although the procedure was in effect, no frequency had been established for the PM route.

The inspector reviewed the Fire Protection Incident Reports from January 1, 1997, to July 6, 1997, and determined that 50 percent (66 of 132) of the reports were for response to spurious detector alarms. Approximately 62 percent of the spurious alarms were found to have occurred in the Reactor or Diesel Generator Buildings. One incident report recorded that a detector in the Unit 1 Reactor Building that alarmed had fallen apart. The inspector concluded that periodic inspection and cleaning may have reduced the number of spurious alarms received this year and that the test program for the ionization smoke detectors was ineffective in maintaining proper detector sensitivity as evidenced by the licensee's root cause of the 1992 event and routine spurious detector performance.

TS 6.8.1.f requires that procedures shall be established, implemented, and maintained for implementation of the Fire Protection Program. Section 15.11 of the Carolina Power & Light Corporate Quality Assurance Manual requires that preventive maintenance procedures shall consider manufacturer recommendations, plant operating and maintenance experience. Further review revealed that the manufacturer recommendations required sensitivity testing upon initial installation and annual testing was required for those detectors in the Service Water Building. The licensee determined that no initial sensitivity testing had been performed for 47 detectors installed since 1994 and no sensitivity testing had been performed for those detectors located in the Service Water Building. The failure to perform sensitivity testing in accordance with the frequency stated in the ionization smoke detection system vendor manuals is a violation. This violation is identified as VIO 50-325(324)/97-09-08, Failure to Implement Smoke Detector Procedure.

c. Conclusion

The inspector identified a violation for the failure by the licensee to implement vendor recommendations for an existing preventive maintenance procedure. Proper integration of this experience may have reduced the number of spurious alarms received.

V. Management Meetings

XI Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on August 22, 1997. Post inspection briefings were conducted on August 1 and August 15, 1997. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Barnes, Manager Training
C. Barnhill, Dosimetry Supervisor, Environmental and Radiation Control
A. Brittain, Manager Security
M. Christinziano, Manager Environmental and Radiation Control
R. Crate, Superintendent, Radiation Protection
W. Dorman, Supervisor Licensing and Regulatory Programs
N. Gannon, Manager Maintenance
J. Gawron, Manager Nuclear Assessment Section
S. Hinnant, Vice President, Brunswick Steam Electric Plant
D. Holder, Supervisor, Radwaste Programs
L. Illy, Principle Engineer, EQ, Nuclear Engineering Department
K. Jury, Manager Regulatory Affairs
R. Krich, Chief Engineer, Nuclear Engineering Department
W. Levis, Director Site Operations
B. Lindgren, Manager Site Support Services
R. Lopriore, Plant General Manager
J. Lyash, Manager Brunswick Engineering Support Section
G. Miller, Manager Brunswick Engineering Support Section
R. Hiller, Superintendent, Design Control, Nuclear Engineering Department
R. Mullis, Manager Operations
W. Nurnburger, Superintendent, Environmental and Chemistry
D. Pacini, Radiation Control Supervisor
P. Sawyer, Radiation Control Supervisor
S. Tabor, Senior Specialist, Regulatory Compliance
M. Turkal, Licensing Engineer, Regulatory Compliance

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

NRC

E. Brown
C. Patterson
J. Lenahan
N. Merriweather
W. Rankin

INSPECTION PROCEDURES USED

IP 37550: Engineering
 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 84750: Radwaste Treatment, Effluent & Environmental Mon.
 IP 86/50: Transportation of Radioactive Material
 IP 92903: Followup - Engineering
 TI 2515/133 Implementation of Revised 10 CFR Part 71

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-325(324)/97-09-01	VIO	Failure to Consider EQ Requirements in Engineering Evaluations (paragraph E1.1.b.1 and E8.7)
50-325(324)/97-09-02	URI	Accuracy of Measured Temperature Data for EQ Evaluations (paragraph E1.1.b.2)
50-325(324)/97-09-03	VIO	Deficiencies in Preparation of Qualification Data Packages (paragraph E1.1.b.2)
50-325(324)/97-09-04	URI	Effect of Depressurized Electrical Penetrations on EQ Requirements (paragraph E1.1.b.4)
50-325(324)/97-09-05	VIO	Failure of Technicians to Complete Training Qualifications Prior to Performing Tasks Independently (paragraph R1.3)
50-325(324)/97-09-06	VIO	Failure to Comply With Transportation of Radioactive Material Audit Requirements Per 10 CFR 71.137 (paragraph R1.3)
50-325(324)/97-09-07	NCV	Failure to Perform FP Surveillance Testing (paragraph F3.1)
50-325(324)/97-09-08	VIO	Failure to Implement Smoke Detector Procedure (paragraph F3.2)

Closed

50-325/96-15-07	VIO	Engineering and Installation Problems for USI A-46 Electrical Cabinet Modifications (paragraph E8.2)
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50-325(324)/97-02-07	VIO	ESR Design Verification Requirements (paragraph E8.3)
50-324/97-03-01	VIO	Failure to Perform Reportable Event Evaluation for Post Operability of the Unit 2 RWCU Due to Improperly Installed Seals in Rosemount Transmitters (paragraph E8.4)
50-325(324)97-03-02	VIO	Failure to Incorporate an Engineering Service Request in a Change to the UFSAR (paragraph E8.5)
50-325(324)/97-08-06	URI	Failure to Obtain an EQ Disposition on Extension of Vendor Recommended Life for Thermo-Electric Cooler (paragraph E8.7)
50-325(324)/96-16-03	URI	Unresolved Item for lack of accurate dose tracking and dose assignment practices and related procedures (Paragraph R1.2)
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 R8.1)
50-325(324)/97-09-07	NCV	Failure to Perform FP Surveillance Testing (paragraph F3.1)

Discussed

50-325(324)/96-05-02	URI	FSAR Discrepancies (paragraph E3.1)
50-325(324)/95-02	LER	Multiple Chlorine Sensors Used for Control Building Isolation Logic Were Found to be Outside Technical Specification Tolerances During Routine Calibration (paragraph E7.2)
50-325(324)/96-05	LER	Six of Eight Chlorine Sensors Used for Control Building Isolation Logic Were Found Inoperable (paragraph E7.2)
50-325(324)/96-12	LER	Five of Eight Chlorine Detectors Inoperable (paragraph E7.2)
50-325(324)/96-14-05	IFI	Effect of EQ Accuracy on Instrument Setpoint Calculations (paragraph E8.1)
50-325(324)/97-05-06	URI	Deletion of RTT Requirements (paragraph E8.6)